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PRELIMINARY ASSESSMENT/ VISUAL SITE INSPECTION

THE UNIVERSITY OF CHICAGO
CHICAGO, ILLINOIS
ILD005421136

FINAL REPORT

Prepared for

U.S. ENVIRONMENTAL PROTECTION AGENCY
Office of Waste Programs Enforcement
Washington, DC 20460

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CONTENTS

CONTENTS (Continued)

FIGURES

TABLES

EXECUTIVE SUMMARY

PRC Environmental Management, Inc. (PRC), performed a preliminary assessment and visual site inspection (PA/VSI) to identify and assess the existence and likelihood of releases from solid waste management units (SWMU) and other areas of concern (AOC) at the University of Chicago (UC) in Chicago, Cook County, Illinois. This summary highlights the results of the PA/VSI and the potential for releases of hazardous wastes or hazardous constituents from SWMUs and AOCs identified. In addition, a completed U.S. Environmental Protection Agency (EPA) Preliminary Assessment Form (EPA Form 2070-12) is included in Appendix A to assist in prioritizing RCRA facilities for corrective action.

The UC is an educational institution, operating a college, graduate department, professional schools, libraries, a press, and a number of educational and research departments and the affiliated UC Hospitals. Waste chemicals are generated within the facility from several hundred laboratories involved in research and instruction. The facility generates and manages a large number of waste streams (greater than 70 different waste streams) including waste streams identified by U.S. EPA D-, K-, P-, and U- waste codes.

The facility has operated at its present location since 1890. The facility occupies about 468 acres in an urban mixed-use area and employs about 9,100 people. The facility's current status is that of a hazardous waste treatment, storage, or disposal (TSD) facility. Throughout its history, the facility has been privately owned and operated. The facility submitted its original Part A Permit Application in 1980. The facility was granted interim status in March 1982. UC submitted revised Part A permit applications in October 1984, January 1990, and December 1990.

In November 1988, the facility submitted a RCRA Part B Permit Application. Four revisions to the Part B Permit Application were submitted in September 1989, January 1990, May 1990 and September 1990, respectively. The facility was issued a RCRA Part B Permit effective August 19, 1991 for the purposes of storing hazardous waste for greater than 90 days in the Laboratory Service Building (SWMU 9).

On March 28, 1989, the facility certified closure of Former Accumulation Area No. 1 (SWMU 3) (Room No. 016 in the Jones Laboratory Complex). IEPA approved closure of SWMU 3 on June 20, 1989.

Only one release has been documented for the facility. Apparently, four underground storage tanks (UST) formerly located at UC's Physical Plant Department Motor Pool Facility (5601 S. Cottage Grove) were removed in October 1991 (PRC 1993o). A field report for Illinois Emergency Services and Disaster Agency (IESDA) Incident No. 913119 describes a leak of gasoline and diesel fuel at this location that was discovered on October 30, 1991 (IESDA 1991). At one tank location, visual and olfactory evidence indicated that a leak had occurred, possibly due to overfills (IESDA 1991). IEPA classified the site as a leaking UST (LUST) (PRC 1993o).

The LUST area is currently undergoing site characterization (PRC 1993o). Sampling data collected in February 1993, from soil borings and monitoring wells located near the LUST revealed soil and groundwater contamination. IEPA/LUST soil cleanup objectives were exceeded at four soil boring locations (B-16, B-19, B-21, and VP-1), with the highest contamination present at soil boring B-21 (see Attachment B for a figure showing the soil boring locations). Contaminant concentrations measured at soil boring B-21 included total benzene, toluene, ethylbenzene, and xylene (BTEX) at 777 milligrams/kilograms (mg/kg); benzo(a)pyrene (BaP) at 0.61 mg/kg; acenapthene at 9.4 mg/kg; meta- and ortho- (m & p) xylene at 492 mg/kg; and benzene at 0.92 mg/kg. BTEX components were below detection limits at monitoring wells MW-1 through MW-11, with the exception of MW-9 where benzene was measured at 0.12 milligrams/liter (mg/L). (Monitoring well MW-9 is at the same location as soil boring B-21.) Nine polycyclic aromatic hydrocarbons (PAH) were also measured at monitoring well MW-9, including BaP at 0.0038 mg/L and acenapthylene at 0.47 mg/L (UAS 1993).

Two additional monitoring wells were installed prior to December 7, 1993. For the purposes of this report, the LUST is considered AOC 1.

The PA/VSI identified the following eighteen SWMUs and two AOCs at the facility:

Solid Waste Management Units

1. Franklin McLean Research Institute (FMI) Blockhouse

2. Former Medical Center Accumulation Area
3. Former Accumulation Area No. 1
4. Former Accumulation Area No. 3
5. Former Accumulation Area No. 4
6. Former Research Institute Dock Accumulation Area
7. Paint Shop Accumulation Area
8. Printing Service Accumulation Area
9. Laboratory Service Building
10. Former Low-level Radioactive Waste Accumulation Area
11. Low-level Radioactive Waste Accumulation Areas
12. Carlson Building Incinerator Area
13. Anatomy Department Incinerator Area
14. Former CLI Hospital Incinerator Area
15. Cottage Grove Dock Accumulation Area
16. Used Oil Underground Storage Tank (UST)
17. Former Wyler Hospital Incinerator Area
18. Former Accumulation Area No. 2

Areas of Concern

1. LUST
2. Fuel Storage USTs

The potential for release to groundwater, surface water, air, and on-site soils is low for SWMUs 1 through 15, 17 and 18. These SWMUs are all located indoors, were or are resting on concrete floors, and have secondary containment. Also, SWMU 3 has been closed. SWMUs 2, 4, 5, 6, 8, 10, 14, 17, and 18 are no longer active. SWMU 9 is operated under a RCRA permit. SWMU 1 is kept locked when not in use. Access to SWMU 9 is restricted by fences, a locked gate and doors, and a 24-hour infrared burglar alarm. Access to the Cottage Grove Dock from the street is restricted during non business hours by a locked gate. SWMU 15 itself is not locked to allow for 24-hour use by authorized personnel. However, the entire dock is monitored 24 hours per day by a camera surveillance system. The remainder of these SWMUs are located in areas that are locked when not in use and outside of business hours.

The potential for release to groundwater, surface water, air and on-site soils is also low for SWMU 16 and AOC 2. No leaks or releases have been documented for these USTs.

As described above, AOC 1 is associated with a release of petroleum discovered in October 1991. Recent sampling results are summarized above.

Dormitories and a hotel are located on the facility property. The nearest public residences and commercial businesses are located immediately north and south of the facility. The facility is located outside of the 100-year flood plain. The nearest surface water bodies include an unnamed pond and two lagoons located about 1,000 feet west and east of the facility respectively. Lake Michigan is located about 3,200 feet east of the facility and is used for various recreational purposes as well as a source of drinking water for the City of Chicago and several other communities. The nearest drinking water intake is located about 2.9 miles east of the facility in Lake Michigan. Groundwater is not used as a drinking water source supply within 3 miles of the facility. The nearest industrial well is located about 2 miles west and upgradient of the facility.

PRC recommends that no further action be taken for SWMUs 1 through 13 and 15 through 18 and AOC 2. PRC recommends that the facility close SWMU 14 pursuant to IEPA requirements and continue to characterize AOC 1 and implement the necessary remedial actions based on the results of that characterization.

1.0 INTRODUCTION

PRC Environmental Management, Inc. (PRC), received Work Assignment No. C05087 from the U.S. Environmental Protection Agency (EPA) under Contract No. 68-W9-0006 (TES 9) to conduct preliminary assessments (PA) and visual site inspections (VSI) of hazardous waste treatment and storage facilities in Region 5.

As part of the EPA Region 5 Environmental Priorities Initiative, the RCRA and CERCLA programs are working together to identify and address RCRA facilities that have a high priority for corrective action using applicable RCRA and CERCLA authorities. The PA/VSI is the first step in the process of prioritizing facilities for corrective action. Through the PA/VSI process, enough information is obtained to characterize a facility's actual or potential releases to the environment from solid waste management units (SWMU) and areas of concern (AOC).

A SWMU is defined as any discernible unit at a RCRA facility in which solid wastes have been placed and from which hazardous constituents might migrate, regardless of whether the unit was intended to manage solid or hazardous waste.

The SWMU definition includes the following:

- RCRA-regulated units, such as container storage areas, tanks, surface impoundments, waste piles, land treatment units, landfills, incinerators, and underground injection wells
- Closed and abandoned units
- Recycling units, wastewater treatment units, and other units that EPA has usually exempted from standards applicable to hazardous waste management units
- Areas contaminated by routine and systematic releases of wastes or hazardous constituents. Such areas might include a wood preservative drippage area, a loading or unloading area, or an area where solvent used to wash large parts has continually dripped onto soils.

An AOC is defined as any area where a release of hazardous waste or constituents to the environment has occurred or is suspected to have occurred on a nonroutine and nonsystematic basis. This includes any area where a strong possibility exists that such a release might occur in the future.

The purpose of the PA is as follows:

- Identify SWMUs and AOCs at the facility
- Obtain information on the operational history of the facility
- Obtain information on releases from any units at the facility
- Identify data gaps and other informational needs to be filled during the VSI

The PA generally includes review of all relevant documents and files located at state offices and at the EPA Region 5 office in Chicago.

The purpose of the VSI is as follows:

- Identify SWMUs and AOCs not discovered during the PA
- Identify releases not discovered during the PA
- Provide a specific description of the environmental setting
- Provide information on release pathways and the potential for releases to each medium
- Confirm information obtained during the PA regarding operations, SWMUs, AOCs, and releases

The VSI includes interviewing appropriate facility staff; inspecting the entire facility to identify all SWMUs and AOCs; photographing all visible SWMUs; identifying evidence of releases; making a preliminary selection of potential sampling parameters and locations, if needed; and obtaining additional information necessary to complete the PA/VSI report.

This report documents the results of a PA/VSI of the University of Chicago (UC) facility (EPA Identification No. ILD005421136) in Chicago, Cook County, Illinois. The PA was completed on

September 29, 1993. PRC gathered and reviewed information from the IEPA and from EPA Region 5 RCRA files. Additional information was obtained from the Illinois State Geological Survey (ISGS), the National Oceanic and Atmospheric Administration (NOAA), the U.S. Department of the Interior (USDI), and the U.S. Geological Survey (USGS). The VSI was conducted on September 30, 1993. It included interviews with facility representatives and a walk-through inspection of the facility. PRC identified eighteen SWMUs and two AOCs at the facility. A follow-up VSI was conducted on December 7, 1993. PRC inspected SWMUs identified after the initial VSI.

PRC completed EPA Form 2070-12 using information gathered during the PA/VSI. This form is included in Appendix A. The VSI and follow-up VSI are summarized and 37 inspection photographs are included in Appendix B. Field notes from the VSI and the follow-up VSI are included in Appendix C.

2.0 FACILITY DESCRIPTION

This section describes the facility's location; past and present operations; waste generating processes and waste management practices; history of documented releases; regulatory history; environmental setting; and receptors.

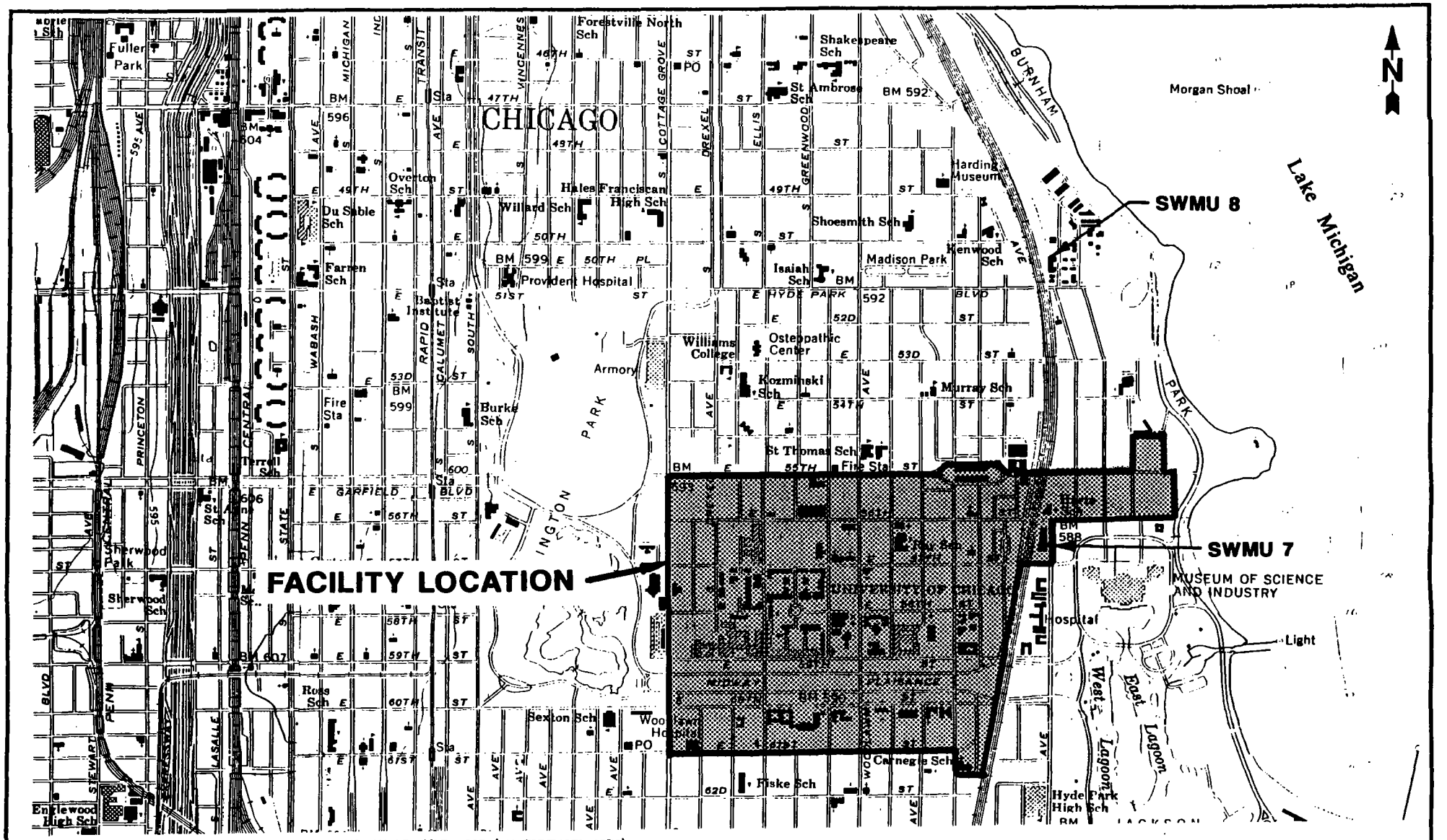
2.1 FACILITY LOCATION

The UC facility is located at 5801 South Ellis Avenue in Hyde Park on the south side of Chicago, Cook County, Illinois. The approximate facility boundary extends from East 55th Street on the north to East 61st Street on the south and from Cottage Grove Avenue on the west to South Lakeshore Drive on the east. Figure 1 shows the location of the facility in relation to the surrounding topographic features (latitude 41°, 47', 24" N and longitude 87°, 35', 54" W). The facility occupies about 468 acres in an urban mixed-use area.

The facility is bordered on the north by the Saint Thomas School and a fire station along 55th Street, and beyond 55th Street, by an urban commercial and residential area: on the west by Washington Park; on the south by an urban commercial and residential area along and beyond 61st Street; and on the east by the Illinois Gulf Central Railroad, Jackson Park, Burnham Park, and Lake Michigan.

2.2 FACILITY OPERATIONS

The UC has operated at this location since 1890 and employs about 9,100 people. The facility consists of a college, graduate departments, professional schools, primary and secondary schools, libraries, a Printing Service, educational research departments, the Pritzker School of Medicine, and the UC hospitals and clinics. The facility consists of about 125 buildings. The University Medical Center, Cummings Life Science Center, George Herbert Jones (Jones) Laboratory Complex, and other significant facility features are shown in Figure 2. Waste chemicals and low-level radioactive wastes are generated within the facility, primarily from several hundred laboratories involved in research and instruction. Three areas (including their associated teaching and research laboratories) generate most of the waste chemicals at the facility: (1) the UC Medical Center, (2) the Cummings



SOURCE: MODIFIED FROM USGS, JACKSON PARK, ILLINOIS, QUADRANGLE, 1963 (PHOTOREVISED 1972) AND ENGLEWOOD, ILLINOIS, QUADRANGLE, 1963 (PHOTOREVISED 1980)

ILLINOIS

QUADRANGLE LOCATION

SCALE 1:24000

1 1/2 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

SCALE 1" = 2,000'

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FIGURE 1
FACILITY LOCATION

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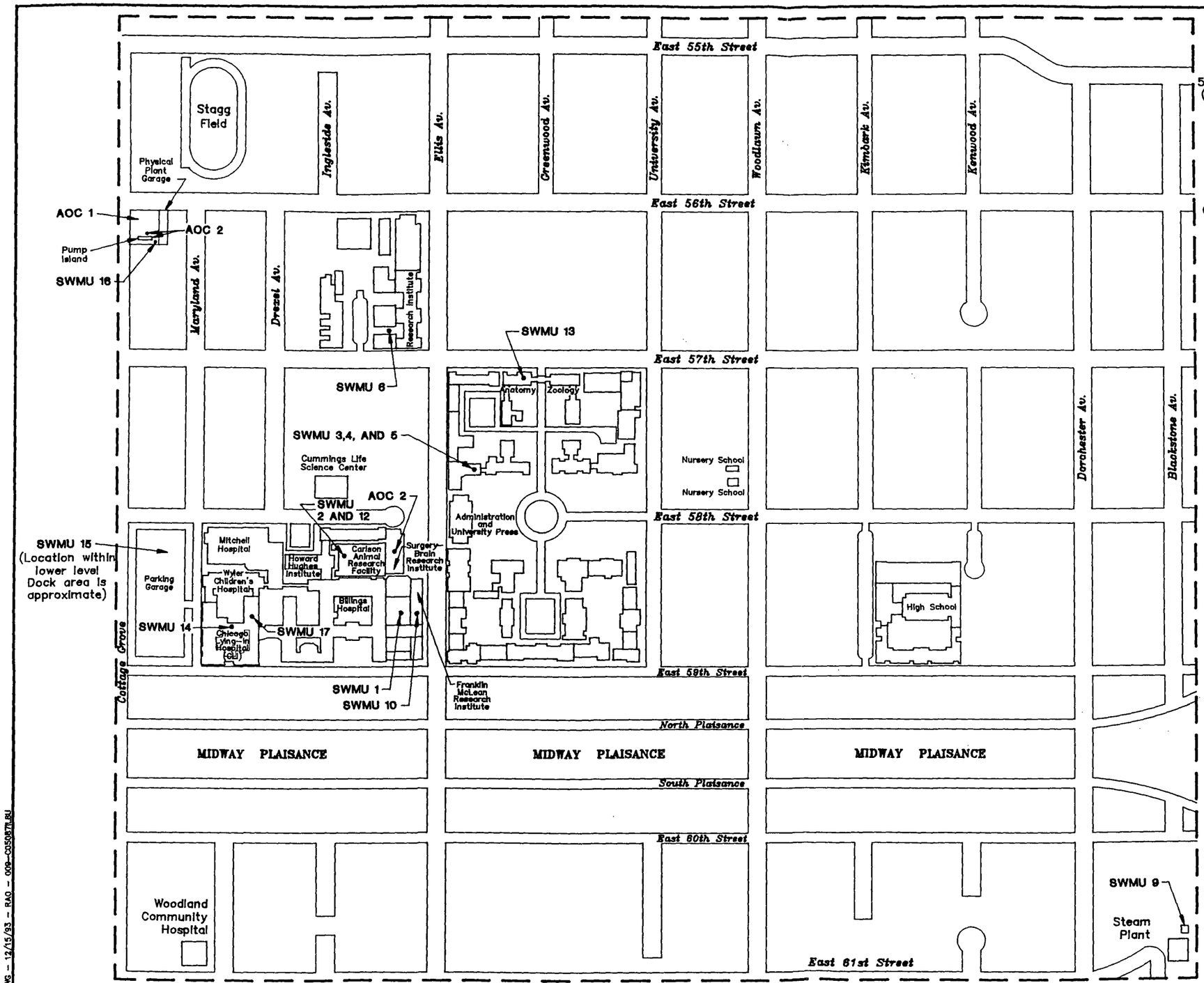

SOLID WASTE MANAGEMENT UNIT DESCRIPTIONS

SWMU 1	Franklin Mclean Reasearch Institute (FMI) Blockhouse
SWMU 2	Former Medical Center Accumulation Area
SWMU 3	Former Accumulation Area No. 1
SWMU 4	Former Accumulation Area No. 3
SWMU 5	Former Accumulation Area No. 4
SWMU 6	Former Research Institute Dock Accumulation Area
SWMU 7	Paint Shop Accumulation Area
SWMU 8	Printing Service Accumulation Area
SWMU 9	Laboratory Service Building
SWMU 10	Former Low-level Radioactive Waste Accumulation Area
SWMU 11	Low-level Radioactive Waste Accumulation Areas
SWMU 12	Carlson Building Incinerator Area
SWMU 13	Anatomy Department Incinerator Area
SWMU 14	Former CLI Hospital Incinerator Area
SWMU 15	Cottage Grove Dock Accumulation Area
SWMU 16	Used Oil Underground Storage Tank (UST)
SWMU 17	Former Wyler Hospital Incinerator Area
SWMU 18	Former Accumulation Area No. 2

AREA OF CONCERN DESCRIPTIONS

AOC 1	Leaking Underground Storage Tank
AOC 2	Fuel Storage USTs

NOTE: SWMU 11 -- Multiple Locations Throughout the Facility

SOURCE: Modified from UC Campus Maps Received by PRC on September 30, 1993 and December 7, 1993

NOT TO SCALE

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FIGURE 2
FACILITY LAYOUT

PRC ENVIRONMENTAL MANAGEMENT, INC.

UC-SITE.DWG - 12/15/93 - RAO - 009-C0508TLRU

Life Science Center, and (3) the Jones Laboratory Complex. Smaller amounts of chemical wastes are generated from the facility's Paint Shop, Printing Service, Physical Plant, and dormitories.

The facility also generates low-level radioactive, pathological, potentially infectious, and chemotherapeutic wastes. Low-level radioactive wastes include scintillation vials containing radioisotopes, lightly contaminated paper, plastic, and glass, animal carcasses, and aqueous waste. These wastes are generated primarily from clinical research laboratories in the facility's Biological Services Division and Cummings Life Science Center. Pathological wastes include animal carcasses and bedding from laboratory experiments and human anatomical wastes from the university's Anatomy Department as well as from various facility medical operations. Potentially infectious wastes and chemotherapeutic wastes are generated by various facility medical operations.

Solid wastes generated from facility operations and the SWMUs where they are managed are discussed in detail in Section 2.3.

2.3 WASTE GENERATION AND MANAGEMENT

This section describes waste generation and management at the UC facility. The facility SWMUs are identified in Table 1. The facility layout, including SWMUs, is shown in Figure 2 (the location of SWMUs 7 and 8 are shown on Figure 1). Facility waste streams are summarized in Table 2.

The facility generates chemical, low-level radioactive, pathological, potentially infectious, and chemotherapeutic wastes. The generation and management of these different wastes types is discussed in Sections 2.3.1 through 2.3.5. Facility representatives stated that they have little knowledge of waste generation and management activities before 1981. Similarly, no documentation of waste generation and management activities prior to 1981 was identified in EPA or IEPA files. Therefore, this section describes primarily waste generation and management activities from 1981 to the present; where available, information prior to 1981 will be discussed.

TABLE 1

SOLID WASTE MANAGEMENT UNITS

SWMU Number	SWMU Name	RCRA Hazardous Waste Management Unit[a]	Status
1	FMI Blockhouse	Yes	Active; less than 90-day storage
2	Former Medical Center Accumulation Area	No	Inactive since early 1991
3	Former Accumulation Area No. 1	Yes	Inactive since 1988; closure approved in 1989
4	Former Accumulation Area No. 3	No	Inactive since mid-1990
5	Former Accumulation Area No. 4	No	Inactive since May or June 1993
6	Former FMI Dock Accumulation Area	No	Inactive since May or June 1993
7	Paint Shop Accumulation Area	No	Active
8	Printing Service Accumulation Area	No	Active
9	Laboratory Service Building	Yes	Active; greater than 90-day storage
10	Former Low-level Radioactive Waste Accumulation Area	No	Inactive since 1992
11	Low-level Radioactive Waste Accumulation Areas	No	Active
12	Carlson Building Incinerator Area	No	Active
13	Anatomy Department Incinerator Area	No	Active

TABLE 1 (Continued)

SOLID WASTE MANAGEMENT UNITS

SWMU Number	SWMU Name	RCRA Hazardous Waste Management Unit[a]	Status
14	Former CLI Hospital Incinerator Area	No	Inactive since about 1987
15	Cottage Grove Dock Accumulation Area	No	Active
16	Used Oil Underground Storage Tank (UST)	No	Active
17	Former Wyler Hospital Incinerator Area	No	This unit was removed prior to September 1989
18	Former Accumulation Area No. 2	No	Inactive since October 1989

Note:

[a] A RCRA hazardous waste management unit is one that currently requires or formerly required submittal of a RCRA Part A or Part B permit application.

TABLE 2

SOLID WASTES

Waste/EPA Waste Code[a]	Source	Solid Waste Management Unit[b, c]
Chemical Wastes		
Laboratory solvent mixtures/D001, F002, F003, F005, and D038	Research and teaching laboratories	1 through 9 and 18
Lab Pack Waste/LABP[b]	Research and teaching laboratories	1 through 9 and 18
Waste paint and solvents/D001	Paint shop	7 and 9
Waste solvents and solvent-based inks/D001	Printing operations	8 and 9
Waste water-based inks/D001	Printing operations	8 and 9
Waste degreasing solvents/D001	Typewriter repair	9
Cooling tower chemicals/D001	Facility cooling towers	9
Lead batteries/D008	Miscellaneous sources	9
Scintillation vials containing ^{3}H and ^{14}C (xylene and toluene based)/D001, F003, and F005	Research and teaching laboratories	1 and 9
Organic solvents containing PCBs/D001, F002, F003, F005, D038	Geophysical laboratory	9
Used oils/NA	Laboratory vacuum pumps and vehicle maintenance	9 and 16
Low-Level Radioactive Wastes		
Scintillation vials containing radioisotopes other than ^{3}H and ^{14}C	Clinical research laboratories	1, 10, and 11
Lightly contaminated paper, plastic, and glass	Clinical research laboratories	1, 10, and 11

TABLE 2 (Continued)

SOLID WASTES

Waste/EPA Waste Code[a]	Source	Solid Waste Management Unit[b, c]
Animal carcasses	Research and teaching laboratories	1, 10, and 11
Aqueous waste	Clinical research laboratories	1, 10, and 11
Miscellaneous radioactive wastes	Case-by-case	Case-by-case
Pathological Wastes		
Animal carcasses and bedding	Carlson Animal Research (CAR) facility and the Animal Resources Center in Wyler Hospital	12 and 17 (bedding only)
Human anatomical wastes	Anatomy Department and various facility medical operations	13 and 15
Incinerator ash	Incineration of pathological wastes	12 and 13
Potentially Infectious Wastes	Various facility medical operations	14 and 15
Chemotherapeutic Wastes	Various facility hospitals	15

Notes:

[a] Not applicable (NA) designates nonhazardous waste.

[b] LABP stands for lab packs; the lab packs contain wastes with a variety of EPA hazardous waste codes.

2.3.1 Chemical Wastes

Chemical wastes (consisting primarily of unused portions of chemicals in their original containers) are generated throughout the facility from several hundred on-site laboratories involved in research and instruction, as well as UC's Paint Shop, Printing Service, and miscellaneous areas including the Physical Plant and dormitories. The wastes include laboratory solvent mixtures; lab pack wastes; waste paint and solvents, waste solvents, cooling tower chemicals (these three wastes are consolidated with laboratory solvent mixtures); old lead batteries (consolidated with lab pack wastes); scintillation vials containing tritium (^{3}H) or carbon-14 (^{14}C) and toluene or xylene; organic solvents containing polychlorinated biphenyls (PCB); and used oil. The facility's current policy is to try to find another on-campus or off-campus user for unused portions of chemicals. Only after no other user can be identified does the facility consider the unused portions to be hazardous waste. Because of the facility's current policy, this report will discuss chemical wastes collectively (including unused portions of chemicals and other chemical wastes, such as spent solvents). This section first identifies the hazardous chemical wastes shipped off site by UC, based on the facility's 1992 hazardous waste report. The section then addresses the generation and management of these wastes in SWMUs 1 through 9. The section concludes with a discussion of the contractor support used by UC to manage chemical wastes on site and coordinate their transport off site.

Chemical wastes are currently or have previously been accumulated or stored at nine locations throughout the facility (SWMUs 1 through 9). According to the facility's 1992 Hazardous Waste Report, UC shipped five types of hazardous chemical wastes off site (UC 1993). Table 3 identifies chemical wastes, their EPA hazardous waste codes, the amount of waste shipped, the name and location of the facility receiving the waste, and the receiving facility's disposition of the waste (if indicated on the form). These wastes are discussed below in greater detail.

Waste generation and management in the following areas is discussed below: the Franklin McLean Research Institute (FMI) Blockhouse (SWMU 1), the Former Medical Center Accumulation Area (SWMU 2), the Jones Laboratory Complex (SWMUs 3 through 5), the Former FMI Dock Accumulation Area (SWMU 6), the Paint Shop Accumulation Area (SWMU 7), the Printing Service Accumulation Area (SWMU 8), and the Laboratory Service Building (SWMU 9).

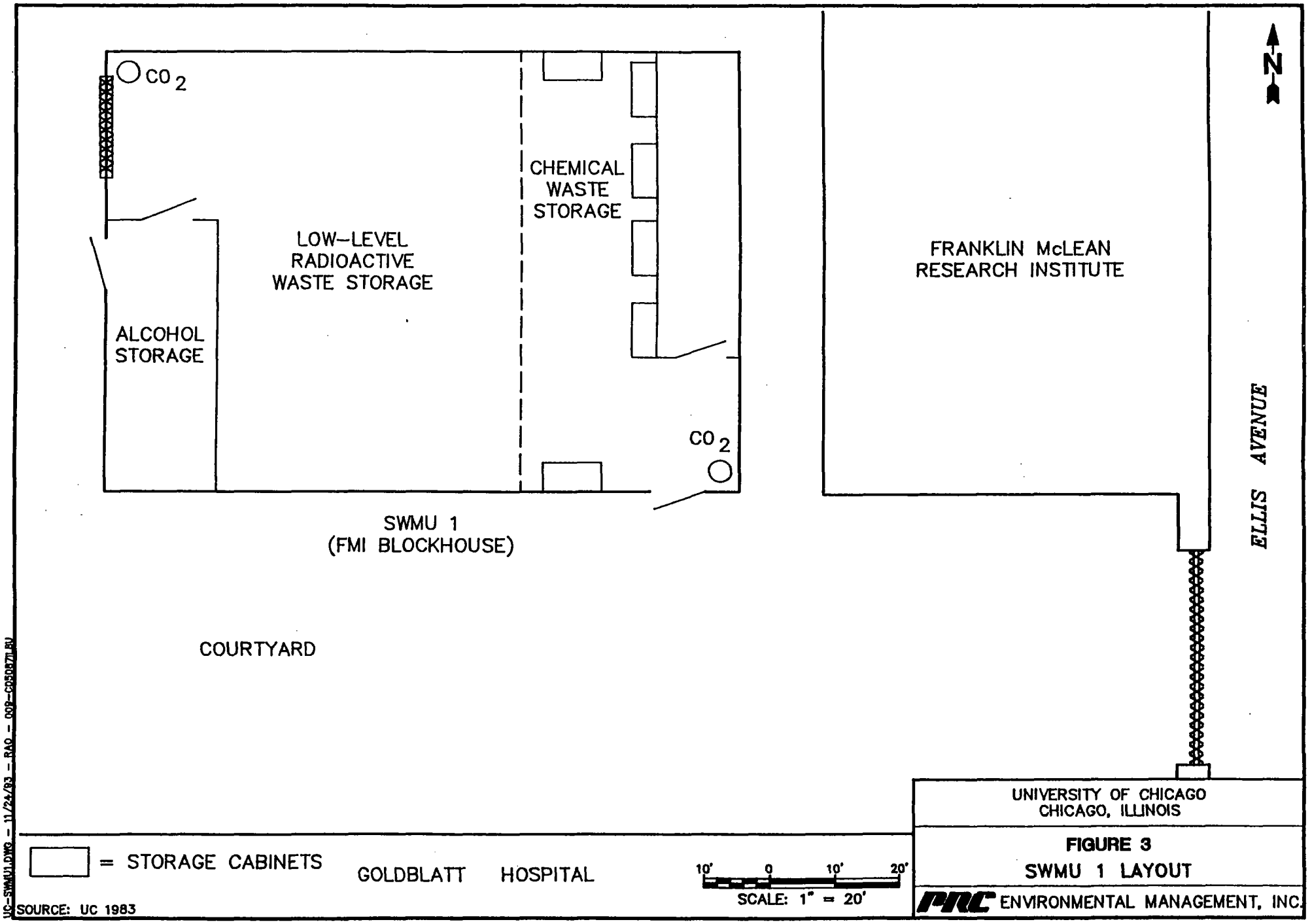
TABLE 3

HAZARDOUS WASTES SHIPPED OFF SITE BY UC IN 1992

Waste Name	EPA Hazardous Waste Code	Amount of Waste Shipped (gallons)	Name and location of receiving facility	Waste Disposition
Laboratory solvent mixtures (also includes waste paint and solvents, waste solvents, and cooling tower chemicals)	D001, F002, F003, F005, D038	4,045	Environmental Enterprises, Inc. Cincinnati, Ohio	Fuel blending
"Lab packs (treatment)" (may also include old lead batteries)	LABP[a]	752	Environmental Enterprises, Inc. Cincinnati, Ohio	Transfer facility storage
"Lab packs (incineration)" (may also include old lead batteries)	LABP	598	Environmental Enterprises, Inc. Cincinnati, Ohio	Transfer facility storage
Scintillation vials (xylene and toluene based)	D001, F003, F005	592	Environmental Enterprises, Inc. Cincinnati, Ohio and Quadrex HPS in Gainesville, Florida	Transfer facility storage; ultimate disposition is probably incineration
Organic solvents containing PCBs	D001, F002, F003, F005, D038	110	Rollins Environmental Services, Inc. Deer Park, Texas	Transfer facility storage

Modified from UC 1993

[a] LABP stands for lab pack.

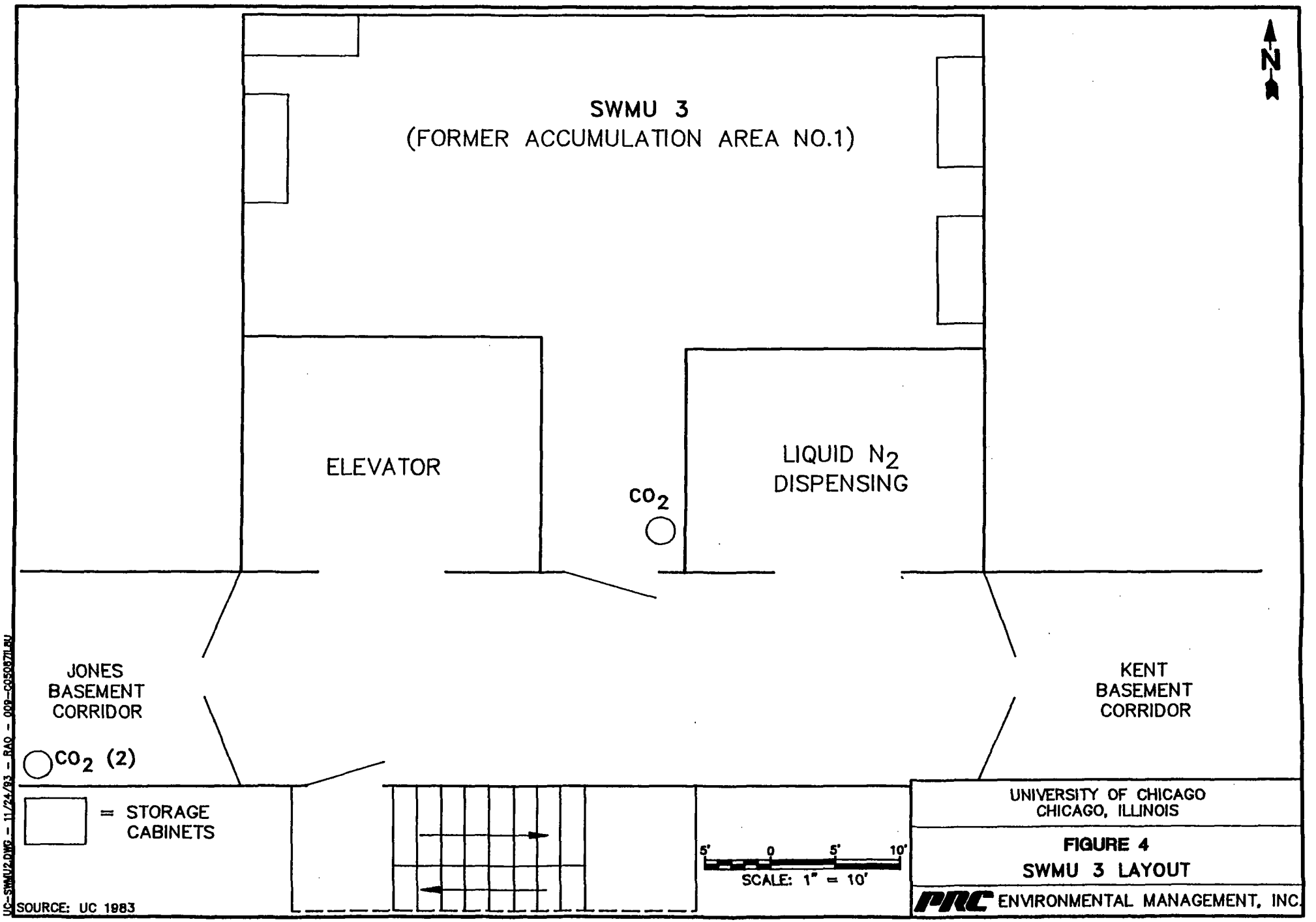


UC-SWMU1.DWG - 11/24/93 - RAO - 009-C050871.AU

Chemical wastes generated at the UC Medical Center and Cummings Life Science Center are accumulated in the FMI Blockhouse (SWMU 1) (see Figure 3). SWMU 1 accumulates miscellaneous chemical wastes (possibly including flammable, toxic, reactive, and corrosive chemicals) (Attachment A lists over 70 chemical wastes [and their EPA hazardous waste codes] commonly stored in SWMU 9; many of these wastes may also have been managed in SWMUs 1, 2, 3, 4, 5, 6, and 18). SWMU 1 also manages low-level radioactive wastes, including scintillation vials containing ^{3}H and ^{14}C and other radioisotopes; lightly contaminated paper, plastic, and glass, and aqueous wastes. Low-level radioactive wastes are discussed in Section 2.3.2. According to a facility representative, the chemical wastes managed in SWMU 1 were accumulated in the Former Medical Center Accumulation Area (SWMU 2) from late 1990 to early 1991.

Chemical wastes generated at the Jones Laboratory Complex include a variety of flammable, toxic, reactive, and corrosive chemicals. Attachment A lists over 70 chemical wastes and their EPA hazardous wastes codes commonly generated and stored in the Jones Laboratory Complex. From about 1981 to 1988, chemical wastes generated in the Jones Laboratory Complex were stored or accumulated in Room No. 016, Former Accumulation Area No. 1 (SWMU 3) (see Figure 4). On June 20, 1989, IEPA approved closure of SWMU 3 (IEPA 1989a). From about January 1989 to October 1989, chemical wastes generated in the Jones Laboratory Complex were accumulated in Room No. 401, Former Accumulation Area No. 2 (SWMU 18). From late 1989 to about mid-1990, these wastes were accumulated in Room No. 409, Former Accumulation Area No. 3 (SWMU 4). From mid-1990 to about May or June of 1993, chemical wastes generated in the Jones Laboratory Complex were accumulated in Room No. 104, Former Accumulation Area No. 4 (SWMU 5). Small amounts of chemical wastes generated in FMI laboratories, including a variety of flammable, toxic, reactive, and corrosive chemicals (see Attachment A) were also accumulated in the Former FMI Dock Accumulation Area (SWMU 6) from prior to 1981 until May or June 1993.

Flammable chemical wastes and toxic, reactive, and corrosive wastes managed in SWMUs 1 through 6 are currently consolidated in 55-gallon drums as laboratory solvent mixtures and are consolidated into lab packs in the Laboratory Services Building (SWMU 9). In 1992, UC shipped 4,045 gallons of laboratory solvent mixtures (with EPA hazardous waste codes D001, F002, F003, F005, and D038)


SWMU 3
(FORMER ACCUMULATION AREA NO.1)
N
ELEVATOR
LIQUID N_2
DISPENSING
CO_2
JONES
BASEMENT
CORRIDOR
KENT
BASEMENT
CORRIDOR
CO_2 (2)
= STORAGE
CABINETS
5' 0 5' 10'
SCALE: 1" = 10'
SOURCE: UC 1983
UC-SWMU2.DWG - 11/24/93 - RAO - 009-C050871.RU
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CHICAGO, ILLINOIS
FIGURE 4
SWMU 3 LAYOUT
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to Environmental Enterprises, Inc. (EEI), in Cincinnati, Ohio, for fuel blending. In 1992, UC shipped 752 gallons of lab pack wastes as lab packs (treatment) and 598 gallons as lab pack (incineration); these wastes have no specific EPA hazardous wastes codes. The lab pack wastes were shipped to EEI in Cincinnati, Ohio. Based on the waste descriptions used by UC, it appears that these wastes may have been intended to be treated or incinerated; however, UC's 1992 Hazardous Waste Report (UC 1993) indicates that the wastes were sent to EEI for transfer facility storage.

Waste paint and solvents (D001) generated from UC's Paint Shop are accumulated in a 55-gallon steel drum in the Paint Shop Accumulation Area (SWMU 7), located in the facility's Paint Shop at 5620 South Stony Island Avenue. These wastes are generated from cleaning painting equipment, rinsing out paint cans, and from a paint booth. In the past, the facility's Printing Service generated about 40 gallons of waste solvents and solvent-based inks (D001) per year. According to a facility representative, waste solvents and solvent-based inks were accumulated in a 5-gallon container in the Printing Service Accumulation Area (SWMU 8) (PRC 1993o). According to a facility representative, UC no longer uses the 5-gallon container (PRC 1993o). However, during the follow-up VSI conducted on December 7, 1993, PRC observed a 5-gallon pail that appeared to have possibly been used to clean printing equipment; a scrub brush and a small amount of liquid was observed in the pail. Also during the follow-up VSI a facility representative indicated that waste solvents and solvent-based inks generated during cleanup were absorbed in cleaning rags and accumulated in a 55-gallon drum (SWMU 8), located immediately next to the 5-gallon pail. The drum of rags is collected by a cleaning service that returns clean rags to the Printing Service.

The facility currently uses water-based inks (less than 1 percent volatile organic compounds [VOC]). Waste water-based inks generated during cleanup are still absorbed in cleaning rags and accumulated in the 55-gallon drum. In the fall of 1993, the UC Safety Office issued the Printing Service another 55-gallon drum to accumulate waste water-based inks. At the time of the follow-up VSI, the Printing Service had not yet begun using this 55-gallon drum labeled with EPA hazardous waste code D001.

Finally, the Printing Service infrequently repairs typewriters. Typewriter parts are degreased in a series of covered tanks (see Photograph No. 18). Very infrequently, these tanks are drained and about 30 gallons of spent solvent (kerosene -- D001) is collected in a 55-gallon drum and transported to the Lab Service Building (SWMU 9).

The waste paint and solvents currently managed in SWMU 7, the waste solvents and solvent-based inks, and waste water-based inks managed in SWMU 8, and the waste degreasing solvents generated infrequently in the typewriter repair shop are or were consolidated with other flammable chemicals and in the Lab Service Building (SWMU 9) and shipped off site as laboratory solvent mixtures.

According to a facility representative, additional miscellaneous chemical wastes generated at the facility include cooling tower chemicals (D001), old lead batteries (D008), and used oils (nonhazardous) from vacuum pumps in various laboratories. These wastes are generated seasonally and are picked up at the point of generation and stored in the facility's Laboratory Service Building (SWMU 9) (PRC 1993g). Cooling tower chemicals are currently consolidated with other flammable chemicals and are shipped off site as laboratory solvent mixtures. As necessary, old lead batteries are consolidated with and shipped off site as lab pack waste.

Used oil is also generated from changing oil in facility vehicles. This used oil is stored in a 500-gallon steel Used Oil UST (SWMU 16) located at UC's Physical Plant Department Motor Pool facility.

The Laboratory Service Building (SWMU 9) was constructed in 1986 to consolidate the facility's waste management activities. SWMU 9 consists of a one-story masonry building located in the far southeast portion of the facility (see Figures 2 and 5). Currently, chemical wastes are accumulated only in SWMUs 1, 7, and 8; all other chemical wastes are transported directly from the point of generation to SWMU 9.

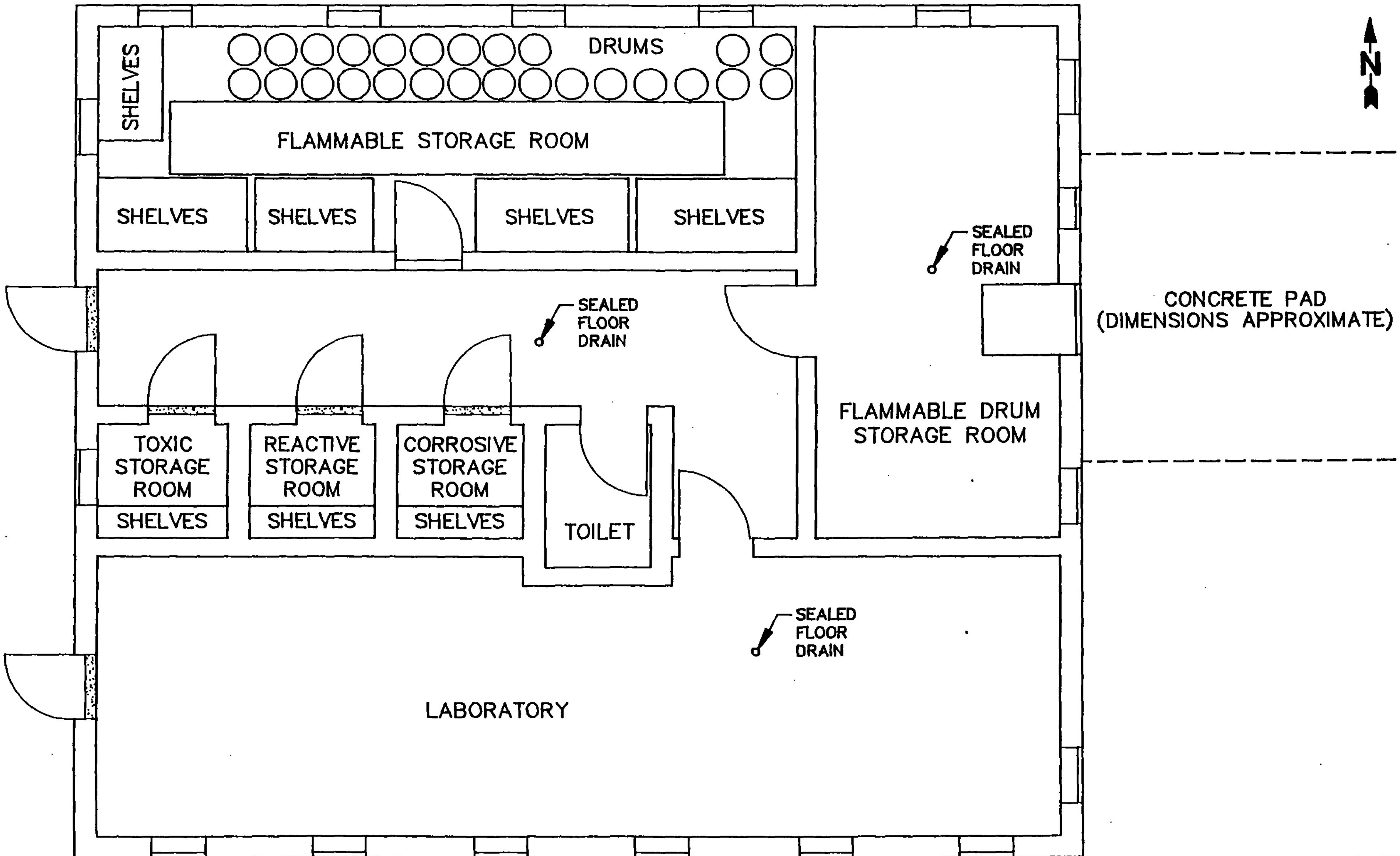
UC uses a contractor to consolidate and coordinated shipment of chemical wastes off-site. Facility safety office personnel no longer directly handle hazardous chemical wastes. Currently contractor personnel pick up chemical wastes at the points of generation and bring them to SWMUs 1 and 9. From SWMU 1, the chemical wastes are transferred to the Laboratory Service Building (SWMU 9). Most chemical wastes are received in their original product containers, and chemical-specific information is read from the containers. If the wastes cannot be characterized by reading the chemical labels or from knowledge of the process generating the waste (such as cleaning of painting equipment), the waste is sent off site for characterization. Depending on their characteristics, chemical wastes are segregated in the following areas in SWMU 9: flammable, toxic, reactive,

corrosive waste, and flammable drum storage rooms (see Figure 5). Attachment A lists chemicals potentially managed in SWMU 9 and potentially managed in SWMUs 1 through 6, as well.

From about 1986 to 1988, hydrolysis and neutralization of acids and bases was performed in a 3-gallon container placed in a sink in the laboratory of SWMU 9. According to a facility representative, the acids and bases were first diluted and then mixed to achieve a pH of 7. The buffered chemicals were then poured down the drain.

The Laboratory Service Building (SWMU 9) also handles scintillation vials containing ^{3}H or ^{14}C and toluene or xylene. These vials are generated primarily in various facility research laboratories. The generation, accumulation, and subsequent transport of these vials to SWMU 9 is described in Section 2.3.2. Once accepted at SWMU 9, scintillation vials containing ^{3}H and ^{14}C are accumulated in 55-gallon drums in the flammable drum storage room. From 1986 to 1991, full drums were transported to an outdoor concrete storage pad before being shipped off site. Since 1991, full drums have been stored in the flammable drum storage room (see Figure 5). In 1992, UC shipped a total of 592 pounds of scintillation vials (xylene and toluene based) to EEI in Cincinnati, Ohio and Quadrex in Gainesville, Florida, for transfer facility storage; according to a facility representative, the vials are incinerated (PRC 1993f).

In 1992 UC generated 110 gallons of organic solvents containing PCBs (with EPA hazardous waste codes D001, F002, F003, F005, and D038). This waste stream was generated when pump oil generated and collected from a geophysical laboratory at the facility was consolidated with two 55-gallon drums of flammable solvents (PRC 1993q). The consolidation took place in the Laboratory Service Building (SWMU 9). The waste stream was originally shipped to Rollins Environmental Services, Inc. (Rollins), in Deer Park, Texas, as a laboratory solvent mixture for transfer facility storage. Characterization of the waste stream by Rollins revealed its PCB content which, according to a facility representative, was due to the pump oil. Facility representatives did not know the ultimate disposition of this waste, but it is probably incinerated because of the PCB content.



SWMU 9
(LABORATORY SERVICE BUILDING)

SOURCE: UC 1990c

3/32" 0 3/32" 3/16"
SCALE: 3/16" = 1'

UNIVERSITY OF CHICAGO
CHICAGO, ILLINOIS

FIGURE 5
SWMU 9 LAYOUT

PRC ENVIRONMENTAL MANAGEMENT, INC.

Prior to 1986, the facility employed S.E.T. Liquid Systems, Inc., of Wheeling, Illinois, to lab-pack and transport hazardous chemical wastes from SWMUs 1 and 3 (UC 1983). The chemical wastes were transported under manifest to S.C.A. Chemicals Services, Inc., in Chicago, Illinois, for incineration or to Chemical Waste Management of Alabama for landfilling (UC 1983). The facility's laboratory personnel were responsible for transporting the chemical wastes from the points of generation to the accumulation points and for consolidating the chemicals in SWMUs 1 and 3.

From 1986 to 1991, the facility employed Precision Energy Systems (Precision) of Lombard, Illinois, to perform similar functions. According to a facility representative, Precision was a broker of chemical wastes. Facility representatives did not know the ultimate disposition of the facility's chemical wastes from 1986 to 1991.

Since 1991, the facility has employed Wilpen Environmental (Wilpen) of Chicago, Illinois, to consolidate chemical wastes and coordinate shipment of these wastes off site from the Laboratory Service Building (SWMU 9).

2.3.2 Low-Level Radioactive Wastes

The facility generates five types of low level radioactive wastes (PRC 1993f):

- Scintillation vials containing ^{3}H and ^{14}C
- Scintillation vials containing radioisotopes other than ^{3}H and ^{14}C
- Lightly contaminated paper, plastic, and glass
- Animal carcasses
- Aqueous waste

These wastes are generated from several hundred laboratories at the facility. UC's Radiation Safety Office (RSO) picks up low-level radioactive wastes from about 400 on-campus clients. Most of these clients are clinical research laboratories in the facility's Biological Services Division and Cummings Life Science Center.

Prior to about 1981, low-level radioactive wastes were managed by Argonne National Laboratory (Argonne), which is run by UC. Each of the waste types was accumulated in separate small containers at the point of generation (PRC 1993f). RSO personnel moved the containerized wastes from the points of generation to FMI Room No. IB21, the Former Low-Level Radioactive Waste Accumulation Area (SWMU 10). In SWMU 10, RSO personnel would repackage the wastes in bins, ensuring that different waste types remained segregated. Argonne would load the repackaged low-level radioactive wastes onto an Argonne truck for off-site disposal (wastes were not disposed of at Argonne).

According to a facility representative, up until two years ago lightly contaminated paper, plastic, and glass was accumulated in SWMU 10. The waste was compacted in the room adjacent to SWMU 10 and brought to the FMI Blockhouse (SWMU 1). Two years ago, the compactor was moved to the FMI Blockhouse (SWMU 1). Accumulation in the Former Low-Level Radioactive Waste Accumulation Area (SWMU 10) stopped. UC continues to store some infrequently used radioactive sources (behind shielding) in SWMU 10.

Since about 1981, UC has contracted Adco Environmental (Adco) of Tinley Park, Illinois to manage low-level radioactive wastes. All wastes are accumulated at the point of generation. Scintillation vials containing ^{3}H and ^{14}C are accumulated in cardboard containers in various laboratories, animal carcasses are accumulated in freezers or in specially designed containers supplied by Adco, in Low-Level Radioactive Waste Accumulation Areas (SWMU 11); the remaining waste types are also accumulated in containers in Low-Level Radioactive Waste Accumulation Areas (SWMU 11). When the containers are full, the laboratory contacts Adco. Adco picks up low-level radioactive waste from the individual laboratories, as requested, every Thursday. The five low-level radioactive wastes generated at UC are discussed in greater detail below.

Scintillation Vials Containing ^{3}H and ^{14}C

Prior to 1986, when the Laboratory Service Building (SWMU 9) was constructed, scintillation vials containing ^{3}H and ^{14}C were accumulated in 55-gallon drums in the FMI Blockhouse (SWMU 1) before being shipped off-site. Since 1986, these vials may accumulate in SWMU 1 for several days, but in most cases are brought by Adco directly from the laboratories to SWMU 9. The facility will

not accept the vials at SWMU 9 unless the vials are accompanied by a form from the laboratory certifying that the radioactivity of the scintillation vials is less than 0.05 microcuries/gram (μCi/g). Once accepted at SWMU 9, scintillation vials containing ^{3}H and ^{14}C are accumulated in 55-gallon drums in the flammable drum storage room. From 1988 to 1991, full drums were transported to an outdoor concrete storage pad at SWMU 9, prior to being shipped off site. Since 1991, full drums are stored in the flammable drum storage room of SWMU 9.

According to a facility representative, the facility ships about 80 55-gallon drums of scintillation vials containing ^{3}H and ^{14}C per year. Because the radioactivity of the vials is below the applicable Nuclear Regulatory Commission (NRC) regulatory level of 0.05 μCi/g (10 Code of Federal Regulations [CFR] Part 20.306 and 32 Illinois Administrative Code) and because the vials generally contain toluene or xylene, the vials are shipped off site as hazardous waste. In 1992, the facility shipped 592 pounds of scintillation vials from SWMU 9 to Quadrex in Gainesville, Florida (UC 1993). Some of the scintillation vials containing ^{3}H and ^{14}C may be accumulated with scintillation vials containing other radioactive isotopes, which are discussed below (PRC 1993f).

Scintillation Vials Containing Radioisotopes Other Than ^{3}H and ^{14}C

Scintillation vials containing radioisotopes other than ^{3}H and ^{14}C are also accumulated in containers (SWMU 11) at the point of generation. Scintillation vials containing radioactive isotopes with half-lives of less than 90 days are disposed of in the trash when the vial's radioactivity falls to negligible levels (PRC 1993f). Scintillation vials with longer half-lives are picked up by Adco and brought to the FMI Blockhouse (SWMU 1), where they are consolidated into 55-gallon drums. The radioactivity of the drums is monitored by RSO personnel and the drums are inspected to ensure proper labeling and packaging. Each week, Adco removes only those drums that RSO has approved (based on monitoring and inspection results) for shipment. These drums of scintillation vials are shipped to Quadrex in Gainesville, Florida (PRC 1993f).

Lightly Contaminated Paper, Plastic, and Glass

Containers of lightly contaminated paper, plastic, and glass (SWMU 11) represent about 75 percent of the facility's low-level radioactive waste by volume. These wastes are also picked up by Adco and

brought to the FMI Blockhouse (SWMU 1), where they are consolidated into 55-gallon drums. The radioactivity of the drums is monitored by RSO personnel to ensure proper packaging. Each week, Adco removes only those drums that RSO has approved for shipment. Drums of lightly contaminated paper, plastic, and glass are shipped with aqueous wastes (see below) to the Chemnuclear landfill in Barnwell, South Carolina. Before leaving Illinois, the wastes are supercompacted at a Chemnuclear-related company in Shanahan, Illinois (PRC 1993f).

Animal Carcasses

Animal carcasses containing radioisotopes with half-lives of less than 90 days are accumulated in freezers and allowed to decay. When the radioactivity of these carcasses is below 0.05 μCi/g, the carcasses are transported to and incinerated in the Carlson Building Incinerator Area (SWMU 12) (PRC 1993j).

Animal carcasses containing radioisotopes with half-lives of greater than 90 days are accumulated in specially designed containers (SWMU 11) supplied by Adco. When full, these containers are picked up by Adco and brought to the FMI Blockhouse (SWMU 1) (PRC 1993j). The radioactivity of the containers is monitored by RSO personnel to ensure proper packaging. Each week, Adco removes only those containers that RSO has approved for shipment.

Aqueous Wastes

Aqueous wastes containing radioactive isotopes include various fluids generated or resulting from laboratory experiments. Before being containerized, these wastes are mixed with an approved absorbent, such as Superfine® (PRC 1993f). Aqueous wastes are accumulated in approved containers (SWMU 11) supplied by Adco. When full, these containers are picked up by Adco and brought to the FMI Blockhouse (SWMU 1), where they are consolidated into 55-gallon drums. The radioactivity of the drums is monitored by RSO personnel to ensure proper packaging. Each week, Adco removes only those drums that RSO has approved for shipment.

According to a facility representative, the facility ships about 200 55-gallon drums of low-level radioactive waste per year off site through Adco (PRC 1993f). This total includes drums of

scintillation vials containing isotopes other than ^{3}H and ^{14}C, lightly contaminated paper, plastic, and glass, animal carcasses, and aqueous waste.

Miscellaneous Radioactive Wastes

In exceptional cases involving miscellaneous radioactive wastes, the facility makes case-by-case disposal arrangements. Such exceptional cases might include highly contaminated sealed sources used therapeutically or unusual wastes (such as a radium and beryllium source thought to be left over from the Manhattan Project). In the past, the facility has arranged the disposal of unusual wastes with Scientific Energy Group (SEG) and U.S. Ecology (PRC 1993f).

2.3.3 Pathological Wastes

Pathological wastes generated from five primary locations at the facility include research animal carcasses, associated bedding, human anatomical wastes, and incinerator ash. Research animal carcasses and bedding are generated from the A.J. Carlson Animal Research (CAR) facility and the Animal Resources Center in Wyler Hospital. Human anatomical wastes are generated from the gross anatomy laboratories of the Anatomy Department, as well as from Wyler's Children's Hospital, Mitchell Hospital, and the Surgery Brain Research Pavilion. Pathological waste management is described below.

Pathological wastes, excluding low-level radioactive animal carcasses with a half-life of greater than 90 days, from the CAR facility are disposed of in the Carlson Building Incinerator Area (SWMU 12). The incinerator is a Goder 21-IN-SP located in the subbasement of the Carlson building. The incinerator consists of two incinerator chambers and has been active since about 1967. It currently operates about 4 days per week, for about 8 hours per day, under IEPA Incinerator Permit No. 031600DDP (IEPA 1988a). According to a facility representative, the incinerator generates about 18 50-gallon fiber drums of ash every 2 months. The fiber drums accumulate in the Carlson Building Incinerator Area (SWMU 12) next to the incinerator. The ash is nonhazardous and is shipped to Browning Ferris Industries, Inc. (BFI).

Animal bedding generated from the Animal Resources Center in Wyler Hospital is accumulated in trash cans, transferred to small dumpsters, and brought to the Carlson Building Incinerator Area (SWMU 12). Animal carcasses generated from this same facility are accumulated in small freezers before being transported to SWMU 12.

Animal bedding (presumably generated from the CAR facility) was also disposed of in the Former Wyler Hospital Incinerator (SWMU 17). The incinerator is a Goder 971-IN and was located on the sixth floor in Rooms No. C-663 and C-671 of Wyler Hospital. This incinerator operated under IEPA Incinerator Permit No. 031600DDO (IEPA 1990c); the incinerator was removed in about 1989 (IEPA 1990c; PRC 1993f).

Human anatomical wastes from the Anatomy Department are disposed of in the Anatomy Department Incinerator Area (SWMU 13). The incinerator is a Type 4, Goder 1520 two-chamber incinerator located in the basement of the Anatomy Building (see Figure 2). The incinerator is operated under IEPA Incinerator Permit No. 031600DDN (IEPA 1991). According to a facility representative, the incinerator operates about 1 day per week, for about 2 hours per day. At the time of the VSI, PRC observed that only one of the incineration chambers was operational. Facility representatives did not know when the second incineration chamber had last been operational. Ash from this incinerator is accumulated in 50-gallon fiber drums in the Anatomy Department Incinerator Area (SWMU 13) next to the incinerator. The ash is disposed of in a cemetery owned by UC (PRC 1993i).

According to a facility representative, until about 4 years ago, human anatomical wastes generated from (1) Wyler's Children's Hospital, (2) Mitchell Hospital, and (3) the Surgery Brain Research Pavilion was incinerated in the Former Chicago Lying-In (CLI) Hospital Incinerator (SWMU 14) in the basement of the CLI Hospital. In September 1987, the incinerator stack collapsed and the resulting fire burned much of SWMU 14 (IEPA 1990c). The incinerator was rebuilt, but has remained inactive (IEPA 1990c).

Currently, human anatomical wastes are generated at the rate of about 80 pounds per day (PRC 1993l) from the Wyler's Children's Hospital, the Mitchell Hospital, and the Surgery Brain Research Pavilion. These wastes are transported by UC's Environmental Services Department (ESD) personnel from the point of generation to the Cottage Grove Dock Accumulation Area (SWMU 15) behind

Mitchell Hospital (PRC 1993l). SWMU 15 consists of two rooms on the dock. One room is used to accumulate human anatomical wastes and potentially infectious wastes (see Section 2.3.4) and chemotherapeutic wastes (see Section 2.3.5) (PRC 1993l). The other room contains two compactors that are used to compact various nonhazardous wastes such as paper and cardboard generated at various UC medical facilities. Every 2 days BFI drives a specially outfitted semi-trailer to the Cottage Grove dock. ESD personnel transfer the pathological wastes from SWMU 15 into a compartment of the semi-trailer. The trailer also has separate compartments for potentially infectious and chemotherapeutic wastes – see subsections 2.3.4 and 2.3.5). The semi-trailer remains at the dock for 2 days, after which it is replaced with a new semi-trailer. According to a facility representative, BFI ultimately incinerates the human anatomical wastes in a BFI incinerator.

2.3.4 Potentially Infectious Wastes

Potentially infectious wastes consisting primarily of bandages, dressings, blood, and blood products are generated at the rate of about 4,400 lbs/day (PRC 1993l), primarily from three locations at the facility (PRC 1993e): (1) Wyler Children's Hospital; (2) Mitchell Hospital; and (3) the Surgery Brain Research Pavilion. Until about 4 years ago, ESD personnel disposed of potentially infectious wastes by incineration in SWMU 14. After SWMU 14 was removed, the facility arranged for disposal with BFI. The wastes are packaged in plastic bags, placed in cardboard boxes, and brought to the Cottage Grove Dock Accumulation Area (SWMU 15) (PRC 1993l). From SWMU 15, the wastes are transferred to a compartment in the BFI semi-trailer discussed in Section 2.3.3. According to a facility representative, the potentially infectious wastes are autoclaved and shredded by BFI, before being sent to a landfill for ultimate disposal (PRC 1993e).

2.3.5 Chemotherapeutic Wastes

Chemotherapeutic drugs are antineoplastic agents used in cancer therapy and treatment. These drugs are received and prepared for use in the facility's pharmacies. Chemotherapeutic wastes consist of the drug's original packaging, as well as needles, syringes, and associated packaging that remains after the drug has been administered to the patient (PRC 1993e). Chemotherapeutic wastes are generated at three primary locations at the facility: (1) the in-patient pharmacy in Mitchell Hospital; (2) the hematology and oncology unit on the sixth floor of Mitchell Hospital; and (3) the out-patient

clinic in Billings Hospital (PRC 1993h). These wastes are generated at a rate of about 40 lbs/day (PRC 1993h).

Chemotherapeutic wastes are collected from the point of generation, transported to the Cottage Grove Dock Accumulation Area (SWMU 15) by ESD personnel, and packaged in rigid 8-gallon plastic containers (PRC 1993h). From SWMU 15, the wastes are transferred to a compartment in the BFI semi-trailer discussed in Section 2.3.3. According to a facility representative, chemotherapeutic wastes are incinerated by BFI in a BFI incinerator (PRC 1993l).

2.4 HISTORY OF DOCUMENTED RELEASES

Only one release has been documented for the facility. According to a facility representative, four underground storage tanks (UST) formerly located at UC's Physical Plant Department Motor Pool facility (5601 S. Cottage Grove) were removed in October 1991 (PRC 1993o). A field report for Illinois Emergency Services and Disaster Agency (IESDA) Incident No. 913119 describes a leak of gasoline and diesel fuel at this location that was discovered on October 30, 1991 (IESDA 1991). The field report lists four USTs with the following capacities: one 6,000-gallon; two 3,000-gallon; and 1 550-gallon. According to a facility representative, at one tank location, visual and olfactory evidence indicated that a leak had occurred (PRC 1993o). The field report states that the cause of the release is suspected to be overfills (IESDA 1991). IEPA classified the leak as a leaking UST (LUST) (PRC 1993o). According to a facility representative, the leak may have occurred from the lines running from the storage tanks to the pumps, as evidenced by inspection of the tanks and the distribution of contamination.

The LUST area (for the purposes of this report, considered to be AOC 1) is currently undergoing site characterization (PRC 1993o). Sampling data collected in February 1993, from soil borings and monitoring wells located near AOC 1 revealed soil and groundwater contamination (UAS 1993). IEPA/LUST soil cleanup objectives were exceeded at four soil boring locations (B-16, B-19, B-21, and VP-1), with the highest contamination present at soil boring B-21 (see Attachment B for a figure showing the soil boring and monitoring well locations). Contaminant concentrations measured at soil boring B-21 included total benzene, toluene, ethylbenzene, and xylene (BTEX) at 777 milligrams/kilograms (mg/kg); benzo(a)pyrene (BaP) at 0.61 mg/kg; acenapthene at 9.4 mg/kg; meta-

and ortho- (m & p) xylene at 492 mg/kg; and benzene at 0.92 mg/kg. BTEX components were below detection limits at monitoring wells MW-1 through MW-11, with the exception of MW-9 where benzene was measured at 0.12 mg/L (milligrams/liter). (Monitoring well MW-9 is at the same location as soil boring B-21.) Nine polycyclic aromatic hydrocarbons (PAH) were also measured at monitoring well MW-9, including BaP at 0.0038 mg/L and acenapthylene at 0.47 mg/L (UAS 1993).

According to a facility representative, two additional monitoring wells were to be installed near AOC 1 before December 1993 (PRC 1993n); these wells were in place at the time of the follow-up VSI conducted on December 7, 1993.

No other releases at the facility have been documented.

2.5 REGULATORY HISTORY

UC submitted a Notification of Hazardous Waste Activity to EPA on August 18, 1980 (PRC 1993s). The facility submitted a RCRA Part A permit application on November 19, 1980 (UC 1980). The application listed the following process codes and capacities:

- Storage in containers (S01) apparently for Former Accumulation Area No. 1 (SWMU 3) (1,000 liters)
- Treatment in a tank or tanks (T01), for an unidentified unit (250 liters)
- Incineration (T03), apparently for the Carlson Building Incinerator Area (SWMU 12), the Anatomy Department Incinerator Area (SWMU 13), and the Former Hospital Incinerator (SWMU 14) (2,000 liters)
- Distillation for recovery of solvents and mercury (T04), for an unidentified unit with an unknown capacity.

This application listed more than 70 hazardous wastes, including wastes identified by EPA D-, K-, P-, and U- waste codes. EPA granted the facility interim status in March 1982 (EPA 1982).

EPA approved a revised RCRA Part A permit application for the facility on October 24, 1984 (EPA 1984). The revised application incorporated three major changes: (1) it increased the design capacity for storage in containers (S01) to 2,000 liters; (2) it added the process code T04 for hydrolysis and neutralization of acids and bases in the Laboratory Service Building (SWMU 9), which did not begin

until 1986; and (3) it included the construction of a new building (SWMU 9) to consolidate facility waste management activities.

The facility's revised 1984 Part A Permit application did not include T01, T03, and the original T04 process codes. The facility may have anticipated incinerating hazardous wastes, but the facility's Part B permit application indicated that the facility does not incinerate hazardous waste (UC 1988b); the facility has incinerated only pathological wastes and potentially infectious wastes. The process code for incineration (T03) may have been included on a protective basis. PRC was unable to find any information describing the T01 and the original T04 process codes and facility representatives had no knowledge of such a processes. These codes may also have been included on a protective basis.

The facility submitted a RCRA Part B permit application to EPA on November 8, 1988 (UC 1988b) for the Laboratory Service Building (SWMU 9). The Part B permit application included the facility's 1984 Part A permit application (UC 1988b).

The facility's Part B permit application underwent four revisions. These revisions were submitted on September 21, 1989 (UC 1990a); January 22, 1990 (UC 1990a); May 14, 1990 (UC 1990b); and September 14, 1990 (UC 1990c) in response to notice of deficiency letters from IEPA (IEPA 1988c; 1989b; 1990a; and 1990b). Significant changes incorporated in these revisions are summarized below.

In the second revision, dated January 22, 1990, the Part A permit application was amended to include the EPA hazardous waste code, U006, to the description of hazardous wastes to be consistent with the facility closure plan (UC 1990a). In the third revision, dated May 14, 1990, the facility removed the T04 process code from both the Part A and Part B permit applications (UC 1990b). In the fourth revision, dated September 14, 1990, the facility increased the capacity of the S01 process code to 4,600 gallons (UC 1990c and 1991).

The facility submitted a revised Part A permit application, dated December 3, 1990, adding four hazardous waste codes (D018, D019, D022, and D040) as a result of the toxicity characteristics leaching procedure (TCLP) waste analysis results (UC 1990d).

IEPA issued a Hazardous Waste Management RCRA Part B Permit to the facility on July 15, 1991, effective August 19, 1991 (IEPA 1992). The permit allows the Laboratory Service Building (SWMU 9) to store hazardous waste for greater than 90 days. Because of a typographical error by the facility, the permit was issued for a maximum volume of hazardous and nonhazardous waste storage of 460 gallons. In a letter to IEPA, dated September 5, 1991, the facility identified the error and requested that the allowable storage capacity be corrected to 4,600 gallons (UC 1991). IEPA issued a modified RCRA Part B Permit, effective March 30, 1992 (IEPA 1992). The facility informed EPA of the change in a letter dated June 19, 1992 (UC 1992b).

On August 24, 1988, IEPA approved the closure plan submitted by the facility for the Former Accumulation Area No. 1 (SWMU 3) (UC 1988a; IEPA 1989a). On March 28, 1989, the facility certified the closure of SWMU 3. On April 25, 1989, an IEPA representative inspected SWMU 3 and determined that closure was completed in accordance with the approved closure plan. IEPA approved closure of SWMU 3 on June 20, 1989 (IEPA 1989a).

In the past, the facility has had only a few compliance problems. On September 10, 1992, EPA issued a Complaint and Compliance Order (the complaint), Docket No. V-W-024 92), to the facility (EPA 1992). The complaint alleges that the facility failed to submit an amended Part A permit application by September 25, 1990. The amended Part A permit application was required because EPA promulgated the toxicity characteristics leaching procedure (TCLP) rule on March 29, 1990 and UC managed hazardous wastes exhibiting the TCLP characteristics for benzene, carbon tetrachloride, chloroform, and trichloroethene (EPA hazardous waste codes: D018, D019, D022, and D040). The complaint proposed a civil penalty of $53,010.

The facility submitted an amended Part A permit application dated December 3, 1990 (UC 1990d). The facility also filed an answer to the complaint on an unknown date (Jenner & Block 1992). In a letter to EPA, the facility stated that it uses benzene, chloroform, carbon tetrachloride, and trichloroethene only as solvents (Jenner & Block 1992). The facility argued that it was not required to renotify EPA of its use of solvents bearing F-codes (apparently chloroform does not have an associated F-code). Because EPA had prior notice of the use of these four chemicals and renotification for solvent use is not required (according to the facility), the facility argued that it should not have been found in violation of RCRA.

The facility was most recently inspected by IEPA on January 20, 1993. The only problem noted by the inspector pertained to inadequate aisle space in SWMU 9. The problem was corrected before the IEPA inspector left the facility. The identification of inadequate aisle space and its subsequent correction was documented in the inspection narrative, but the facility was not issued a notice of violation (PRC 1993n).

The facility has seven air permits. Four permits are for current or former incinerators at the facility (PRC 1993p). The first air permit, IEPA No. 031600DDN, covers the operation of the Anatomy Department Incinerator Area (SWMU 13). The second air permit, IEPA No. 031600DDO, covers the operation of the Former Wyler Hospital Incinerator Area (SWMU 17). The third air permit, IEPA No. 031600DDP, covers the operation of the Carlson Building Incinerator Area (SWMU 12) and an ethylene oxide sterilizer apparently located in the Carlson Building. The fourth air permit, IEPA No. 031600EYY, covers the operation of the former CLI Hospital Incinerator Area (SWMU 14).

The fifth air permit, IEPA No. 031600FHW, covers the operation of two ethylene oxide sterilizers located in the Mitchell and CLI Hospitals. The sixth air permit, IEPA No. 031600FLT, covers the operation of the facility's Physical Plant, including four boilers and one aboveground 110,000-gallon tank containing product No. 2 fuel oil. The facility's seventh air permit, IEPA No. 031600EYO, covers the facility's printing operations located at 5020 South Cornell. The facility has had no major violations of any of its air permits (PRC 1993p). The facility also has no history of odor complaints from area residents.

The facility does not have a National Pollutant Discharge Elimination System (NPDES) permit. The facility is also not required to have a combined sewer discharge permit, according to a facility representative.

The facility had a number of USTs, ranging in capacity from 2,000 gallons to 26,000 gallons, with some tank capacities unknown (UC 1986; PRC 1993o). Tanks have been used to store heating oil, gasoline, and diesel fuel, as well as naphtha (UC 1986; PRC 1993o). Most facility USTs have been removed; of the six remaining USTs, five are active (UC 1992a; PRC 1993o).

Three USTs are located at UC's Physical Plant Department Motor Pool facility (5601 S. Cottage Grove) under IEPA Registration No. 2009846 (UC 1992a; PRC 1993o). The first of these is a 500-gallon steel UST used to store used oil (SWMU 16). The second is a fiberglass 12,000-gallon UST of double-walled construction used to store gasoline. The third is a fiberglass 2,000-gallon UST of double-walled construction used to store diesel fuel. According to a facility representative, the three USTs were leak tested in late 1991 as part of the investigation of AOC 1; the results showed no evidence of leaks (PRC 1993q).

The fourth active UST, a 4,000-gallon fiberglass tank, is located at the Surgery Brain Research Pavilion (UC 1992a), and is used to store product diesel fuel. The fifth active UST, a 8,000-galloon fiberglass tank, is located at the UC Medical Center Receiving Area (5831 S. Cottage Grove), and is used to store product diesel fuel. These two tanks operate as emergency generator supply tanks and were leak-tested by the facility in August 1993; the results showed no evidence of leaks (PRC 1993o).

Collectively the four Fuel USTs are considered AOC 2, excluding the Used Oil UST (SWMU 16). A sixth, inactive UST was emptied of 500 gallons of heating in 1986 and is not considered to be an AOC.

As described in Section 2.4, five USTs were formerly located at UC's Physical Plant Department Motor Pool facility. These tanks were removed in October 1991. At one tank location, visual and olfactory evidence indicated that leakage had occurred. A field report related to this incident stated that the cause of the release was suspected overfills. The site was designated a LUST (AOC 1) site by the IEPA (PRC 1993o). AOC 1 is currently undergoing site characterization. Eleven monitoring wells have been in place for just over 1 year and have been sampled three times. Two more wells were to be installed by December 1993 (PRC 1993o); these wells were in place at the time of the follow-up VSI conducted on December 7, 1993.

No CERCLA activity has occurred or is ongoing at the facility.

2.6 ENVIRONMENTAL SETTING

This section describes the climate; flood plain and surface water; geology and soils; and groundwater in the vicinity of the facility.

2.6.1 Climate

The climate in Cook County is continental with cold winters and warm summers. The average daily temperature is 49.2 °F. The lowest average daily temperature is 21.4 °F in January. The highest average daily temperature is 73 °F in July (NOAA 1990). Lake Michigan, located 3,200 feet east of the facility, has a moderating influence on temperatures.

The total annual precipitation for the county averages about 33 inches (NOAA 1990). The mean annual lake evaporation is about 30 inches.

The prevailing wind is from the west-southwest. Average wind speed is highest in April at 12 miles per hour (NOAA 1990).

2.6.2 Flood Plain and Surface Water

The facility is located outside of the 100-year flood plain (UC 1988b). The nearest surface water bodies are an unnamed pond and a lagoon. The unnamed pond is located about 1,000 feet west of the facility, in the south half of Washington Park. The pond is isolated, and has no inlets or discharge points. The pond is stocked and actively fished (PRC 1993a). While the pond is not supposed to be used for swimming, isolated swimming may occur. In addition, the pond has occasionally been used for boating instruction classes (PRC 1993a).

The West Lagoon of Jackson Park is located about 1,000 feet east of the facility. The West Lagoon discharges into the East Lagoon, which discharges into Lake Michigan. The West Lagoon and the East Lagoon are stocked with fish twice each summer and are actively fished (PRC 1993b). Neither of the lagoons is used for swimming or boating (PRC 1993b). Lake Michigan is located about

3,200 feet east of the facility and is used for various recreational purposes, including swimming, fishing, and boating.

Storm water runoff from the site is routed to a combined storm water and sanitary sewer (PRC 1993d). The combined sewer discharges to the Stickney Water Reclamation District in Stickney, Illinois (PRC 1993d).

2.6.3 Geology and Soils

Soils in the area of the UC facility consist of surface soils, sands (with traces of gravel at depth), and fill (ISGS 1993; UAS 1993). This material is underlain by lake deposits consisting of well bedded silts and clays from the Equality Formation (IEPA 1990c). The lake deposits are underlain by glacial tills of the Wedron Formation (William Wrigley, Jr., Company [Wrigley] 1993; IEPA 1990c).

The uppermost bedrock in the vicinity of the UC facility is dolomite of the Silurian-age Niagaran Series lying 50 to 100 feet below the ground surface (Wrigley 1993). In the vicinity of the site, the Niagaran Series is about 270 feet thick (ISGS 1993; IEPA 1990c).

Underlying the dolomite is the Ordovician-age Maquoketa Shale. Maquoketa Shale is red and oolitic near the top and is gray-green with some interbedded shaley limestone at depth; it is about 230 feet thick in the vicinity of the site (Willman 1971; ISGS 1993). Underlying the shale is several thousand feet of Ordovician-age and Cambrian-age sandstones and limestones (Willman 1971; Wrigley 1993).

2.6.4 Groundwater

Groundwater in the vicinity of the UC facility is found at a depth of about 5 feet below ground surface. Shallow groundwater flows northwest at a velocity of about 1.31×10^{-7} feet/second, or about 4 feet/year (UAS 1993).

2.7 RECEPTORS

The facility occupies about 468 acres in Hyde Park, an urban mixed-use area in Chicago, Cook County, Illinois. Hyde Park has a population of about 28,630 (U.S. Bureau of the Census 1990). Chicago has a population of about 2,783,726 (Rand McNally 1993).

The facility is bordered on the north by the Saint Thomas School and a Fire Station along 55th Street, and beyond 55th Street by an urban commercial and residential area; on the west by Washington Park; on the south by an urban commercial and residential area along and beyond 61st Street; and on the east by the Illinois Gulf Central Railroad, Jackson Park, Burnham Park, and Lake Michigan. The facility employs about 9,100 people and includes a college, various graduate departments and professional schools, and primary and secondary schools, as well as private residences. Access to much of the facility is open to the public. The Laboratory Service Building (SWMU 9) has a 24-hour, infrared-activated burglar alarm and fire detection system that is connected directly to campus security. While the Cottage Grove Accumulation Area (SWMU 15) and the associated semi-trailers are not locked when not in use, access to the Cottage Grove Dock itself is restricted by a locked gate along the street; access to SWMU 15 from the hospital is monitored by a camera surveillance system (PRC 1993r).

The nearest surface water bodies include an unnamed pond and a lagoon. The unnamed pond is located in Washington Park, about 1,000 feet west of the facility. The pond is stocked and actively fished. The pond is not supposed to be used for swimming, but isolated swimming incidents may take place. The pond has occasionally been used for boating instructional classes. The pond is isolated and has no inlets or discharge points. Other surface water bodies in the area include the West and East Lagoons of Jackson Park, located about 1,000 to 1,500 feet east of the facility. The lagoons are stocked with fish twice each summer and are actively fished. Neither of the ponds is used for swimming or boating. The West Lagoon discharges into the East Lagoon which discharges into Lake Michigan. Lake Michigan is located about 3,200 feet east of the facility and is used for industrial purposes and numerous recreational purposes, including swimming, fishing, and boating. Chicago and several surrounding communities uses the lake as a source of drinking water. The nearest drinking water intake is called the 68th Street Crib and is located in Lake Michigan about 2.9 miles due east from the facility (PRC 1993c).

Groundwater is not used as a drinking water source supply within 3 miles of the UC facility. The nearest industrial well is located about 2 miles west and upgradient of the facility. No private, industrial, or commercial wells are located within 3 miles downgradient of the facility (ISGS 1993).

Sensitive environments are not located on site. Lake Michigan, is located about 3,200 feet east of the facility. However, no sensitive environments are located in or along the lake within 2 miles of the facility (USDI 1983).

3.0 SOLID WASTE MANAGEMENT UNITS

This section describes the eighteen SWMUs identified during the PA/VSI. The following information is presented for each SWMU: description of the unit, dates of operation, wastes managed, release controls, history of documented releases, and PRC's observations. Figure 2 shows the SWMU locations.

SWMU 1 **FMI Blockhouse**

Unit Description: This unit is a limestone structure, 45 feet by 58 feet in size, located in the courtyard of Billings Hospital; the blockhouse can be accessed through an arch on the west side of 5860 Ellis Avenue (see Figure 3). The unit has a locked steel door at its southeast corner and a locked 8-foot shutter door on its western side.

The eastern third of the unit, measuring about 21 feet by 45 feet, manages chemical wastes, mostly unused portions of miscellaneous chemicals from the UC Medical Center and research laboratories in the Biological Sciences Division. The middle portion of the unit, measuring about 40 feet by 45 feet, manages low-level radioactive wastes. An area about 11 feet by 27 feet at the southwest corner of the unit stores and dispenses ethyl alcohol for the UC Medical Center (UC 1983).

Date of Startup: According to a facility representative, this unit began operations in about 1981.

Date of Closure: This unit is currently active. However, since May 1988, it has been used only as an accumulation point; chemicals received in this unit are transported to the Laboratory Service Building (SWMU 9) within a couple of days for consolidated management.

Wastes Managed:

This eastern third of the unit manages miscellaneous chemical wastes (possibly including flammable, toxic, reactive, and corrosive chemicals). The wastes are segregated in different fire-proof cabinets according their hazardous characterization.

The middle portion of the building, is used to store low-level radioactive wastes (including scintillation vials containing radioisotopes other than ^{3}H and ^{14}C; lightly contaminated paper, plastic, and glass; animal carcasses [containing radioisotopes with half-lives greater than 90 days]; and aqueous wastes). Wastes are stored in 55-gallon steel drums, pending manifested disposal or radioactive decay to negligible levels of activity.

A third portion of the unit, along the southwest corner, is used to store and dispense ethyl alcohol for the UC Medical Center.

Release Controls:

The outside entrance to the chemical waste storage section of this unit has a 6-inch-high sill across the door to prevent the release of chemical wastes to the outside. The unit does not appear to have any floor drains in the chemical waste storage section. The unit is also located in an asphalt covered courtyard.

History of Documented Releases:

No releases from this unit have been documented.

Observations:

PRC observed only the chemical waste storage section of this unit (see Figure 4 and Photographs No. 1 and 2). PRC did not observe the low-level radioactive storage section of the unit (see Figure 4 and Photograph No. 3) because of the required medical monitoring.

In the chemical waste storage section, PRC observed metal shelving units with one small bottle of uranyl acetate and overpack drums

stacked with cardboard trays of scintillation vials containing radioactivity of less than 0.05 μCi/g (see Photographs No. 1 and 2). PRC also observed two fire-proof metal storage cabinets and two 55-gallon drums of hazardous waste.

The first drum was partially full and was labeled as containing waste flammable liquid with the following codes: D001, F002, F003, F005, D018, D036, and D038. Accumulation in this drum began on August 19, 1993. The second drum was also partially full and was labeled as containing a xylene and toluene mixture with the following waste codes: F003 and F005. Accumulation in this drum began on September 20, 1993.

A 30-gallon bucket of formaldehyde solution labeled as nonregulated, several large bags of vermiculite, and various fire fighting equipment (including a fire blanket and a fire extinguisher) were also observed in the unit during the VSI. PRC noted only tiny cracks in the flooring and one small stain. PRC observed no evidence of release.

SWMU 2 **Former Medical Center Accumulation Area**

Unit Description: This unit is located in a subbasement in the Carlson Building; the unit is a small storage room (Room No. JO-83), about 5 feet square, currently used for miscellaneous storage. According to a facility representative, the unit was used from late 1990 to early 1991 to accumulate miscellaneous chemical wastes (generally in their original product bottles) from the UC Medical Center. Chemical wastes were stored on shelving, but not necessarily the units shown in Photograph No. 4.

Date of Startup: This unit began operation in late 1990.

Date of Closure:	This unit has been inactive since early 1991.
Wastes Managed:	This unit managed miscellaneous chemical wastes (possibly including flammable, toxic, reactive, and corrosive chemicals) from the UC Medical Center. According to a facility representative, chemical wastes were stored on shelving units, generally in their original product bottles.
Release Controls:	This unit had no release controls other than the concrete walls and floors of the unit itself and the Carlson Building as a whole.
History of Documented Releases:	No releases from this unit have been documented.
Observations:	The unit contained shelves filled with miscellaneous supplies during the VSI. No unused portions of chemicals were being accumulated, and PRC observed no staining or floor drains; cracks in the floor had been repaired. However, much of the floor area could not be observed because the shelves covered the room (see Photograph No. 4).
SWMU 3	**Former Accumulation Area No. 1**
Unit Description:	SWMU 3, Room No. 016 in the Jones Laboratory Complex, is an enclosed area about 36 feet by 16 feet in size with concrete walls, floor, and a raised door sill (see Figure 4 and Photograph No. 5). The unit operated as a storage unit for miscellaneous chemical wastes generated from the University's Chemistry, Biology, Zoology, and Anatomy Departments. Chemical wastes were generally received in their original containers and were segregated according to their hazardous characteristics (for

example, flammable, toxic, reactive, and corrosive) before being stored in segregated metal cabinets (see Figure 5). The unit now stores rarely used laboratory equipment and various empty containers.

Date of Startup: This unit was first stored chemical wastes in about 1980 (UC 1983).

Date of Closure: This unit has been inactive since 1988. IEPA approved closure of this unit on June 20, 1989 (IEPA 1988a).

Wastes Managed: This unit managed miscellaneous chemical wastes generated from the University's Chemistry, Biology, Zoology, and Anatomy Departments. Attachment A lists chemicals commonly encountered stored in this unit. The wastes were stored in six metal cabinets that are no longer present.

Release Controls: A 6-inch sill runs across the entrance to the unit to prevent release of chemical wastes. Metal cabinets used to store the wastes, if similar to cabinets observed in the Former Accumulation Area No. 2 (SWMU 4) may have contained vermiculite or other absorbent material to contain spills on the floor of the cabinet. The floor drain in the unit appeared to be open during the VSI. However, a facility representative stated that he thought the drain had been plugged. The concrete walls and floors of the unit itself, and the Jones Laboratory Complex in general, also act as release controls. Closure of SWMU 3 was approved by IEPA in 1989.

History of Documented Releases: No releases from this unit have been documented.

Observations: The unit contained miscellaneous rarely used laboratory equipment and various empty containers. The concrete floor was badly chipped and

worn in various locations, and PRC observed numerous stains. In addition, water was leaking into the area through the ceiling.

SWMU 4	**Former Accumulation Area No. 3**
Unit Description:	The unit is a former laboratory located in Room No. 409 on the fourth floor of the Jones Laboratory Complex. The walls of the room are constructed of masonry, and the floor is concrete. The two metal storage cabinets now present in SWMU 4 were formerly located in the northeast corner of this unit. The unit is now used to store old equipment and furniture.
Date of Startup:	This unit began operation in late 1989.
Date of Closure:	This unit has been inactive since about mid-1990.
Wastes Managed:	This unit managed miscellaneous chemical wastes (possibly including flammable, toxic, reactive, and corrosive chemicals). Attachment A lists chemical wastes commonly stored in SWMU 3, and probably represents chemicals commonly accumulated in this unit. Chemical wastes were usually accumulated in their original product containers and were accumulated in two metal fire-proof cabinets.
Release Controls:	The bottom shelf of each cabinet was covered in vermiculite and contained a shallow pan with absorbent to retain any spills. No floor drains were observed; however, much of the floor was covered with furniture and equipment and could not be viewed. The concrete walls of the unit itself, and the Jones Laboratory Complex in general, also act as release controls.
History of Documented Releases:	No releases from this unit have been documented.

Observations:	The unit contained miscellaneous furniture and equipment during the VSI (see Photograph No. 7). The cabinets are no longer located in this unit. The concrete floor of the unit had no visible cracks. PRC noted no evidence of release.
SWMU 5	**Former Accumulation Area No. 4**
Unit Description:	This unit consists of the western portion (measuring about 8 feet by 15 feet) of Room No. 104, which is a physical chemistry laboratory on the first floor of the Jones Laboratory Complex. Wastes were accumulated in two metal cabinets (see Photograph No. 6).
Date of Startup:	This unit began operation in about mid-1990.
Date of Closure:	This unit has been inactive since May or June 1993.
Wastes Managed:	This unit managed miscellaneous chemical wastes (possibly including flammable, toxic, reactive, and corrosive chemicals). Attachment A lists chemical wastes commonly stored in SWMU 3, and probably represents chemical wastes commonly accumulated in this unit. Chemical wastes were usually accumulated in their original product containers and were accumulated in two metal, fire-proof cabinets (see Photograph No. 6).
Release Controls:	The bottom shelf of each cabinet was covered in vermiculite and also contained a shallow pan with absorbent to retain any spills. A floor drain located between the two cabinets appeared to be open. A facility representative did not know whether the drain had been plugged. The concrete walls and floor of the unit itself, and the Jones Laboratory Complex in general, also act as release controls.

History of Documented Releases: No releases from this unit have been documented.

Observations: The unit contained two empty metal storage cabinets during the VSI (see Photograph No. 6). The concrete floor was in good condition, with no cracks. PRC noted no evidence of release.

SWMU 6 **Former Research Institute Dock Accumulation Area**

Unit Description: This unit is a small closet-like storage room (about 6 feet square) at the north end of the FMI receiving dock. The unit was used to accumulate miscellaneous chemical wastes generated at the FMI. The unit is now used to store miscellaneous supplies and equipment.

Date of Startup: This unit probably began operation before 1981. However, the facility representatives said they had little knowledge of waste management activities before 1981.

Date of Closure: This unit has been inactive since May or June 1993.

Wastes Managed: This unit managed miscellaneous chemical wastes (possibly including flammable, toxic, reactive, and corrosive chemicals). Chemical wastes were accumulated on pallets, generally in their original product containers.

Release Controls: The unit has concrete floor and walls. Also, the receiving area is covered by asphalt.

History of Documented Releases: No releases from this unit have been documented.

Observations:	The unit contained miscellaneous equipment and supplies during the VSI (see Photograph No. 8). The concrete floor had no visible cracks. PRC noted no evidence of release.
SWMU 7	**Paint Shop Accumulation Area**
Unit Description:	This unit includes a 55-gallon steel drum located in one corner of the facility's Paint Shop (see Photograph No. 19).
Date of Startup:	Facility representatives did not know the date this unit began operations. However, such a container has most likely been used by the Paint Shop since before 1981.
Date of Closure:	This unit is active.
Wastes Managed:	This unit manages waste paint and solvents generated from cleaning of painting equipment. Specifically, wastes are generated from cleaning of paint brushes, rinsing out paint cans, rinsing paint guns in a recirculating system (see Photograph No. 20), and cleaning out the collection pit associated with the Paint Shop's paint booth (see Photographs No. 21 and 22). These wastes are labeled D001.
Release Controls:	This unit has no release controls beyond the concrete floors and walls of the building.
History of Documented Releases:	No releases from this unit have been documented.
Observations:	The drum appeared to be in good condition and showed no signs of cracks (see Photograph No. 19). Miscellaneous small stains were observed on the floor of the unit; such stains are consistent with the

nature of the unit's operations. PRC observed no evidence of releases.

SWMU 8 **Printing Service Accumulation Area**

Unit Description:

In the past, the facility used solvent-based inks for printing operations. Waste solvents from these operations were accumulated in a 5-gallon container in the printing shop. According to a facility representative, the printing operations generated about 40 gallons of waste solvents and solvent-based inks. During the follow-up VSI, PRC observed a 5-gallon pail that appeared to be used to possibly clean printing equipment. Also during the follow-up VSI, a facility representative indicated that oftentimes waste solvents and solvent-based inks generated during cleanups were absorbed in cleaning rags. These rags are accumulated in a 55-gallon drum (see Photograph No. 23). A cleaning service picks up the dirty rags and later returns clean rags to the Printing Service.

UC currently uses water-based inks. According to a facility representative, waste water-based inks are still absorbed in cleaning rags and accumulated in the 55-gallon drum. In the fall of 1993, the UC Safety Office issued the Printing Service another 55-gallon drum (see Photograph No. 24) to accumulate waste water-based inks. As of the follow-up VSI conducted on December 7, 1993, the Printing Service had not begun to use this new drum.

Date of Startup:

Facility representatives did not know when the 5-gallon container and the 55-gallon drum for rags were first used. The Printing Service had not yet begun using the new 55-gallon drum.

Date of Closure:

The facility stopped using the 5-gallon container in about 1991. The facility currently uses a 55-gallon drum for dirty rags and is expecting

to start using a new 55-gallon drum to accumulate waste water-based inks soon.

Wastes Managed:

The 5-gallon container managed spent solvents and solvent-based inks from the facility's printing operations. The facility generally used a paraffin-saturated hydrocarbon as a solvent and generated about 40 gallons per year of spent solvents. The spent solvents and solvent-based inks were identified with EPA hazardous waste code D001 (PRC 1993n). The Printing Service is expecting to begin using a new 55-gallon drum to accumulate waste water-based inks. According to a facility representative, the water-based inks contain less than 1 percent VOCs; nonetheless, the waste water-based inks will be identified using the EPA hazardous waste code D001.

Release Controls:

This unit has no release controls beyond the concrete floor and walls of the building.

History of Documented Releases:

No releases from this unit have been documented.

Observations:

According to a facility representative, the 5-gallon container was removed in 1991; therefore, PRC did not observe this container. However, PRC did observe a 5-gallon bucket that may have been used to clean the printing equipment (see Photograph No. 23). The 55-gallon drum used to accumulate dirty rags was very messy (see Photograph No. 23). The floor around this drum was covered by numerous stains. However, the staining was not evident beyond the immediate area around the drum; spilled wastes are unlikely to have been released to the environment. The new 55-gallon drum to be used to accumulate waste water-based inks was observed (see Photograph No. 24). This drum has not yet been used.

SWMU 9 **Laboratory Service Building**

Unit Description:

This unit is a one-story masonry structure located on the far southeast side of the facility, immediately north of the steam plant (see Figure 5). The building is divided into six main areas with the following dimensions: (1) laboratory (10 by 35 feet); (2) flammable storage room (8 by 26 feet); (3) toxic storage room (4 by 5 feet); (4) reactive storage room (4 by 5 feet); (5) corrosives storage room (4 by 5 feet); and (6) flammable drum storage room (9 by 18 feet). In addition, this SWMU includes an outdoor concrete pad along the building's south side (see Figure 3).

The unit accumulates and stores (for greater than 90 days) chemical wastes generated primarily from several hundred on-site research and teaching laboratories. Hazardous wastes are or have been received from the facility's Paint Shop, Printing Service, and maintenance operations. The unit also accumulates and stores scintillation vials containing ^{3}H and ^{14}C (with radioactivity of less than 0.05 μCi/g).

The unit has a 24-hour, infrared-activated burglar alarm and fire detection system that is connected directly to campus security.

Date of Startup:

This unit began operations in 1986.

Date of Closure:

This unit is active. The facility stopped using the outdoor concrete pad to store 55-gallon drums of scintillation vials in about 1991. The pad has not been formally closed.

Wastes Managed:

This unit manages miscellaneous chemical wastes from several hundred laboratories involved in research and instruction. The unit also manages hazardous wastes generated in lesser amounts from the facility Paint Shop, Printing Service, and maintenance operations.

Attachment A provides a list of hazardous wastes possibly managed in SWMU 9.

From about 1986 to 1988, hydrolysis and neutralization of acids and bases was performed in a 3-gallon container placed in a sink in the laboratory. According to a facility representative, the acids and bases were first diluted and then mixed to achieve a pH of 7. The buffered chemicals were then poured down the drain.

Scintillation vials containing ^{3}H and ^{14}C are accumulated in 55-gallon drums in the flammable drum storage room.

Release Controls:

All floor drains in the unit are filled and capped. The main entrance and the entrances to the flammable, toxic, reactive, and corrosives storage rooms are separated from the outside and the remainder of the building by 3-inch sills at the doors. These sills prevent the release of hazardous wastes. The outside door of the flammable drum storage room is elevated about 3 inches above the floor and is reached by a ramp. Walls throughout the unit are constructed of masonry and are sealed to the concrete floor with concrete.

Secondary containment in each of the toxic, reactive, and corrosives storage rooms is about 22 gallons. Secondary containment in the flammable storage room is about 355 gallons. Secondary containment in the flammable drum storage room is provided by placing each 55-gallon drum into an oversized salvage drum.

History of Documented Releases:

No releases from this unit have been documented.

Observations:

During the VSI, the laboratory room was empty except for a computer and a printer.

The flammable storage room contained several shelves of miscellaneous solvent wastes in their original product containers, as well as several 10-gallon pails, 30-gallon lab packs, and 55-gallon drums of flammable hazardous wastes. Four drums and one lab pack were labeled as nonregulated (see Photograph No. 9).

The toxics storage room had shelving with three 5-gallon pails and miscellaneous toxic waste materials in their original containers (see Photograph No. 10). Wastes included sodium arsenate (D004) and PCB waste.

The reactive storage room included shelving with 20-gallon containers of waste, miscellaneous reactive waste materials in their original containers, and a container of nonregulated waste (see Photograph No. 11). Wastes included diuric acid (D001) and flammable solids (D001 and D003).

The corrosives storage room contained four 55-gallon drums containing acetic acid (D001, D002, and D003); corrosive liquid (D001 and D002); waste corrosive liquid (D002); and sodium hydroxide (D001 to D005). A 15-gallon plastic container stored nitric acid (D001 to D003). The drums and the container were located on the concrete floor (see Photograph No. 12).

The flammable drum storage room had one 55-gallon drum of waste scintillation vials and a shelving unit containing various gas cylinders (see Photograph No. 13).

The outdoor concrete pad at the unit was empty during the VSI (see Photograph No. 14). The concrete flooring throughout SWMU 9 had no visible cracks. All the 55-gallon drums and smaller storage

containers were sealed. PRC noted no evidence of release in any of the unit's rooms or at the concrete pad.

SWMU 10 **Former Low-level Radioactive Waste Accumulation Area**

Unit Description: This unit consists of Room No. IB21 in the FMI (see Photograph No. 25). Low-level radioactive wastes were accumulated in small containers in this until about two years ago.

Date of Startup: Facility representatives did not know the date the unit began operations. The unit was active prior to 1981.

Date of Closure: This unit has been inactive since about 1992.

Wastes Managed: This unit was used to manage various low-level radioactive wastes generated primarily from clinical research laboratories in the facility's Biological Services Division and the Cummings Life Science Center. Wastes were brought to the unit in small containers. Once in the unit, RSO personnel package the containers in larger bins. Argonne personnel picked up wastes directly from this unit.

After 1981, this unit was used to store only plastic, paper, and glass low-level radioactive wastes. This material was stored in fiber drums, then compacted (the compactor was formerly located outside this unit), and the compacted wastes brought to the FMI Blockhouse (SWMU 1). In 1992, the facility moved the compactor to SWMU 1 and stopped altogether storing low-level radioactive wastes in SWMU 10.

Release Controls: This unit did not have any release controls beyond the concrete floor and walls of the unit and the FMI.

History of Documented Releases: No releases from this unit have been documented.

Observations: This unit is currently used to store absorbent, fiber drums, and miscellaneous supplies and equipment. UC also stores radioactive sources (behind shielding) that it hopes to find additional uses for. PRC observed no evidence of releases.

SWMU 11 **Low-Level Radioactive Waste Accumulation Areas**

Unit Description: This unit consists of approved containers supplied by Adco, the facility's radioactive waste management contractor. The containers are constructed of steel and have a capacity of 55 gallons (see Photograph No. 26). The containers are generally bright yellow and are identified by stickers indicating that the contents is radioactive. Animal carcasses with radioisotopes with half-lives of greater than 90 days are packed in different specially designed double-walled containers. More highly radioactive wastes are accumulated in laboratory hoods behind shielding (see Photograph No. 27).

Date of Startup: This unit has been active since about 1981.

Date of Closure: This unit is active.

Wastes Managed: This unit is used to manage four major types of low-level radioactive wastes: (1) scintillation vials containing radioisotopes other than ^{3}H and ^{14}C, with half-lives of greater than 90 days; (2) lightly contaminated paper, plastic, and glass; (3) aqueous waste; and (4) animal carcasses containing radioisotopes with half-lives greater than 90 days. These low-level radioactive wastes are generated primarily from clinical research laboratories in the facility's Biological Services Division and the Cummings Life Science Center.

When containers become full or storage space becomes insufficient, a laboratory representative calls Adco, which picks up the waste on the following Thursday and transfers it to SWMU 1.

Release Controls:

The containers are constructed of steel. The unit has no other release controls beyond the concrete walls and floor of the unit and the laboratory buildings. The containers used to accumulate animal carcasses are double walled and clearly labeled.

History of Documented Releases:

A facility representative could recall only one minor release in an unidentified lab where aqueous waste rusted through a container. The waste was quickly soaked up with approved absorbent, transferred to an intact container, and brought to SWMU 1 (PRC 1993j). No other releases from this unit have been documented.

Observations:

PRC observed containers in a representative laboratory. The 55-gallon drums were in good condition (no evidence of cracks or dents) (see Photograph No. 26). Wastes stored in a laboratory hood were behind shielding (see Photograph No. 27). PRC observed no evidence of releases.

SWMU 12 **Carlson Building Incinerator Area**

Unit Description:

This unit consists of a room containing a Goder 21-IN-SP incinerator and the 50-gallon fiber drums used to accumulate ash from this incinerator, located in the subbasement of the Carlson Building. The unit consists of two burn units (see Photographs No. 15 and 16). According to a facility representative, the unit operates about 4 days per week, for about 8 hours per day under IEPA Incinerator Permit No. 031600DDP (UC 1988a).

Date of Startup:	According to a facility representative, this unit began operations in about 1967.
Date of Closure:	This unit is active.
Wastes Managed:	This unit incinerates primarily animal carcasses (containing no radioisotopes or with radioactivity of less than 0.05 μCi/g) and animal bedding from clinical research laboratories at the facility. The unit also incinerates paper, wood, floor sweepings, and landscape wastes. According to a facility representative, this unit generates about 18 50-gallon fiber drums of ash every 2 months. The ash is shipped from this unit to BFI.
Release Controls:	This unit has no release controls beyond the concrete walls and floor of the Carlson Building. The incinerator is permitted under IEPA incinerator permit No. 031600DDP.
History of Documented Releases:	No unpermitted releases from this unit have been documented.
Observations:	Both burn units of the incinerator were inactive during the VSI. PRC noted no evidence of release. PRC observed no cracks in the unit or broken covers. Ash containers near the unit appeared to be in good condition (see Photograph No. 15).
SWMU 13	**Anatomy Department Incinerator Area**
Unit Description:	This unit consists of a Type 4, Goder 1520 incinerator, consisting of two burn units (see Photograph No. 17) and the 50-gallon fiber drums used to accumulate ash from this incinerator, located in the basement of Culver Hall (the Anatomy Building). According to a facility representative, the incinerator operates about 1 day per week, for

	about 2 hours per day under IEPA Incinerator Permit No. 031600DDN (UC 1991).
Date of Startup:	Facility representatives did not know the date this unit began operations.
Date of Closure:	This unit is active.
Wastes Managed:	This unit incinerates human anatomical wastes generated in the facility's gross anatomy laboratories in the Anatomy Department. Ash generated from this unit is accumulated in 50-gallon fiber drums located near the incinerator; the ash is subsequently disposed of in a cemetery owned by UC (PRC 1993k).
Release Controls:	This unit has no release controls beyond the concrete walls and floor of the Anatomy Building. The incinerator is permitted under IEPA Incinerator Permit No. 031600DDN.
History of Documented Releases:	No unpermitted releases from this unit have been documented.
Observations:	During the VSI, one of the burn units appeared to be inoperable. Facility representatives did not know how long the burn unit had been inoperable. The other burn unit was inactive. PRC noted no evidence of release. PRC did not observe any cracks or broken covers in the unit. No ash containers were observed near the incinerator.
SWMU 14	**Former CLI Hospital Incinerator Area**
Unit Description:	This unit consisted of a single grate, single chamber incinerator located in the CLI Hospital (PRC 1993t). This unit operated under IEPA Incinerator Permit No. 031600EYY (UC 1990d; IEPA 1990c).

In September 1987, the incinerator stack collapsed and the resulting fire burned much of this unit (IEPA 1990c). According to a facility representative, the collapse was probably the result of temperature stress (PRC 1993t). The unit was rebuilt but has remained inactive since the 1987 incident (IEPA 1990c; PRC 1993e). Until land ban restrictions became effective in the 1980s, the unit was operated about 4 to 6 hours per day, every other day. After the land ban restrictions became effective, the unit was operated up to 12 hours per day, seven days per week (PRC 1993t).

Date of Startup: The unit was probably installed at the time the CLI hospital was constructed, in the late 1920s or early 1930s (PRC 1993t).

Date of Closure: This unit has been inactive since about 1987; however, the unit has not been closed (PRC 1993e; IEPA 1990c). UC has no plans to remove the unit (PRC 1993t). According to an IEPA representative, the unit must be closed because it burned a special waste (potentially infectious waste) (PRC 1993u).

Wastes Managed: This unit managed paper, rubber, plastics, and floor sweepings, as well as human anatomical wastes and potentially infectious wastes (such as bandages, dressings, blood, and blood products) generated from the Wyler's Children's Hospital, Mitchell Hospital, and the Surgery Brain Research Pavilion (IEPA 1990c; PRC 1993e).

Release Controls: This unit has no release controls beyond the concrete walls and floor of the hospital. The unit was permitted under IEPA Incinerator Permit No. 031600EYY. In the fall of 1993, UC replaced the roofed over the opening where the unit's stack exited the hospital building. According to a facility representative, the roof opening had probably been blocked off, but the roof not completed, earlier (PRC 1993t).

History of Documented Releases: No unpermitted releases from this unit have been documented. In September 1987, the incinerator stack collapsed and most of the unit was burned. It is unknown whether any releases occurred as of a result of this incident. Facility representatives were unable to locate records of the 1987 incident and do not know if the unit was operating at the time of the stack collapse.

Observations: During the follow-up VSI, the unit was inactive. PRC noted no evidence of release. PRC did not observe any cracks or broken covers in the unit (see Photograph No. 28). No ash containers were observed near the incinerator.

SWMU 15 **Cottage Grove Dock Accumulation Area**

Unit Description: This unit consists of two small rooms on the Cottage Grove dock located behind Mitchell Hospital (see Photograph No. 29). The rooms measure about 10 by 10 feet, and 20 by 20 feet, respectively. The rooms are not locked when not in use (PRC 1993m); in fact, the "doors" of these rooms consist of strips of plastic. During business hours, the unit is accessible; however, according to a facility representative, someone is at the unit most of the time. If no one is at the unit, unauthorized access is limited because of the presence of UC personnel at the Cottage Grove Dock. After business hours, the Cottage Grove Dock is locked along the street. The dock (and the unit) remains accessible from the hospital, but the dock is monitored by a camera surveillance system.

Date of Startup: Facility representatives did not know the date this unit began operations.

Date of Closure: This unit is active.

Wastes Managed:

The smaller room (see Photographs No. 30 and 31) is used to manage human anatomical wastes, potentially infectious wastes, and chemotherapeutic wastes generated from Wyler's Children's Hospital, Mitchell Hospital, and the Surgery Brain Research Pavilion. The larger room (see Photograph No. 32) contains two compactors used to compact miscellaneous nonhazardous wastes such as paper and cardboard generated by various UC medical facilities.

Wastes from this unit are loaded onto a BFI semi-trailer truck and shipped off site for disposal (see Photograph No. 31). A new truck comes to the Cottage Grove dock every 2 days, so the wastes are accumulated in this unit for no longer than 2 days. According to a facility representative, the semi-trailer is not locked when not in use.

Release Controls:

Wastes are stored in plastic containers packaged in cardboard boxes (see Photographs No. 30 and 31). The flooring and walls of the unit provide additional secondary containment.

History of Documented Releases:

No releases from this unit have been documented.

Observations:

PRC observed this unit during the follow-up VSI conducted on December 7, 1993. Wastes in the smaller room were packaged in plastic containers or in cardboard boxes; the room appeared well organized and reasonably neat. The larger room was empty except for the two compactors. PRC observed no evidence of releases.

SWMU 16

Used Oil UST

Unit Description:

This unit consists of a 500-gallon steel UST located at UC's Physical Plant Department Motor Pool facility.

Date of Startup:	This unit began operations in about 1966 (PRC 1993q).
Date of Closure:	This unit is active.
Wastes Managed:	This unit manages waste oil generated from changing oil in facility vehicles.
Release Controls:	This unit was leak-tested on February 5, 1993; the results indicated that the tank is tight (UAS 1993).
History of Documented Releases:	No releases from this unit have been documented.
Observations:	This unit is located underground and could not be observed during the VSI. Photograph No. 33 shows the covered opening to this unit.

SWMU 17 **Former Wyler Hospital Incinerator Area**

Unit Description:	This unit consisted of a Goder 971-IN incinerator located on the sixth floor of Wyler Hospital in Rooms C-663 and C-671. The unit was permitted under IEPA Incinerator Permit No. 031600DDO (IEPA 1990c; UC 1990d). The unit was removed prior to September 1989 (IEPA 1990c).
Date of Startup:	Facility representatives did not know when this unit began operations.
Date of Closure:	The unit was removed prior to September 1989.
Wastes Managed:	This unit was permitted to burn only animal bedding.

Release Controls:	This unit had no release controls beyond the concrete walls and floor of Wyler Hospital. The unit was permitted under IEPA Incinerator Permit No. 031600DDO.
History of Documented Releases:	No unpermitted releases from this unit have been documented.
Observations:	This unit was removed prior to September 1989. PRC observed no evidence of releases. Room No. C-663 and C-671 are currently used to store animal research supplies and to house a cage washer (see Photographs No. 34 and 35).
SWMU 18	**Former Accumulation area No. 2**
Unit Description:	This unit is Room No. 401 on the fourth floor of the Jones Laboratory Complex. The walls consist of cinderblocks and the floor is concrete. At least one (and maybe two) of the metal storage cabinets formerly located in Former Accumulation Area No. 1 (SWMU 3) were formerly located in this unit. The unit is now used to store miscellaneous electrical supplies (see Photograph No. 36).
Date of Startup:	This unit began operations about January 1989.
Date of Closure:	This unit has been inactive since about October 1989.
Wastes Managed:	This unit managed miscellaneous chemical wastes (possibly including flammable, toxic, reactive, and corrosive chemicals). Attachment A lists chemical wastes commonly stored in SWMU 3, and probably represents chemicals commonly accumulated in this unit. Chemical wastes were usually accumulated in their original product containers and were accumulated in metal fire-proof cabinets.

Release Controls:	The bottom shelf of each cabinet was covered with vermiculite and contained a shallow pan with absorbent to retain any spills. No floor drains were observed; however, much of the floor was covered with supplies and equipment and could not be viewed. The cinderblock walls and concrete floor of the unit itself, and the Jones Laboratory Complex in general, also act as release controls.
History of Documented Releases:	No releases from this unit have been documented.
Observations:	The unit contained shelving and was being used to store miscellaneous electronic equipment and supplies. No cracks were observed in the floor. PRC noted no evidence of releases.

4.0 AREAS OF CONCERN

PRC identified two AOCs during the PA/VSI. These AOCs are discussed below, their locations are shown in Figure 2.

AOC 1 LUST

The facility removed four USTs (ranging in capacity from 550-gallons to 6,000-gallons) located at UC's Physical Plant Department Motor Pool facility in October 1991. In the area of one of tank, visual and olfactory evidence indicated that a leak had occurred. IEPA classified the site as a LUST (PRC 1993n).

The LUST (see Photograph No. 37) is currently undergoing site characterization (PRC 1993n). The Phase II Groundwater Investigation was completed at AOC 1 in February 1993 (UAS 1993); the investigation included collecting soil samples from 8 boring locations and groundwater samples from 7 monitoring wells. Soil and groundwater were found to be contaminated with BETX components and various PAHs (see Section 2.4 for a more complete discussion of the results). Two additional monitoring wells were installed sometime before December 7, 1993, and further remedial efforts (including preparation of a Corrective Action Workplan) have been proposed (UAS 1993).

AOC 2 Fuel Storage USTs

The facility stores diesel fuel and gasoline in four USTs. All four tanks are constructed of fiberglass. Two USTs are located at UC's Physical Plant Department Motor Pool facility: a 12,000-gallon UST of double-walled construction used to store gasoline and a 2,000-gallon UST of double-walled construction used to store diesel fuel. These USTs were leak-tested in the fall of 1991; the results showed no evidence of leaks (PRC 1993q). The remaining two USTs are used as diesel fuel storage tanks for an emergency generator: a 4,000-gallon UST located at the Surgery Brain Research Pavilion and an 8,000-gallon UST located at the UC Medical Center

Receiving Area. Both of these USTs were leak-tested in August 1993; the results showed no evidence of leaks.

5.0 CONCLUSIONS AND RECOMMENDATIONS

The PA/VSI identified eighteen SWMUs and two AOCs at the UC facility. Background information on the facility's location; operations; waste generating processes and waste management practices; history of documented releases; regulatory history; environmental setting; and receptors is presented in Section 2.0. SWMU-specific information, such as the unit's description, dates of operation, wastes managed, release controls, history of documented releases, and observed condition, is presented in Section 3.0. AOCs are discussed in Section 4.0. Following are PRC's conclusions and recommendations for each SWMU and AOC. Table 4, located at the end of this section, summarizes the SWMUs at the facility and the recommended further actions.

SWMU 1 **FMI Blockhouse**

Conclusions: This unit is a limestone structure located in the courtyard of Billings Hospital. The courtyard is surfaced in asphalt. The unit was used to store hazardous chemical wastes (generally in their original containers). The unit currently only accumulates hazardous chemical wastes and stores low-level radioactive wastes. These two waste types are managed in distinct and separate areas of the unit. A 3-inch door sill is present across the only outside entrance to the chemical waste and low-level radioactive waste storage and accumulation areas. Because wastes are managed on concrete floors in separate sections of a building with secondary containment, and because the building is located within an asphalt-covered courtyard, the potential for release from this unit to groundwater, surface water, air, and on-site soils is low.

Recommendations: PRC recommends no further action at this time.

SWMU 2 **Former Medical Center Accumulation Area**

Conclusions: From late 1990 to early 1991, this unit managed chemical wastes (generally consisting of miscellaneous unused chemicals in their original containers); the wastes were generated from the UC Medical Center and were stored on

shelves. Because chemical wastes were stored in the unit in their original product containers, the unit had limited use (over one winter), the unit is located in the basement of the UC Medical Center, the unit and the UC Medical Center has concrete flooring and the unit has no floor drains, the potential for release from this unit to groundwater, surface water, air, and on-site soils is low.

Recommendations: PRC recommends no further action at this time.

SWMU 3 **Former Accumulation Area No. 1**

Conclusions: This unit consists of a room in the basement of the Jones Laboratory Complex (Room No. 016). The unit was used to store chemical wastes (generally consisting of unused chemicals in their original containers) in six metal storage cabinets. Chemical wastes were stored in this unit from about 1980 to 1988. The floor drain in this unit appeared to be open during the VSI; however, a facility representative stated that the floor drain was plugged. No releases have been documented for this unit, and IEPA approved its closure in June 1989. Because of the unit's location in the basement, its concrete flooring and its lack of documented releases, and its approved closure, the potential for release from this unit to groundwater, surface water, air, and on-site soils is low.

Recommendations: PRC recommends no further action at this time.

SWMU 4 **Former Accumulation Area No. 3**

Conclusions: This unit, located on the fourth floor of the Jones Laboratory Complex (Room No. 409), managed the same type of chemical wastes managed in SWMU 3. In fact, the two cabinets used to manage chemical wastes in this unit were first used to manage chemical wastes in SWMU 3. This unit was used from late 1989 to mid-1990. Based on the unit's location indoors within the Jones

Laboratory Complex, its lack of documented releases, and the fact that the unit is no longer used to manage chemical wastes, the potential for release from this unit to groundwater, surface water, air, and on-site soils is low.

Recommendations: PRC recommends no further action at this time.

SWMU 5 **Former Accumulation Area No. 4**

Conclusions: From about mid-1990 to May or June 1993, chemical wastes (generally consisting of unused chemicals in their original containers) were stored in two metal, fire-proof, chemical storage cabinets in this unit. The unit is located on the first floor of the Jones Laboratory Complex (Room No. 104). Each storage cabinet had absorbent material spread over its lowest shelf. A facility representative did not know whether the floor drain in the unit was plugged; however, no releases from this unit have been documented. Because chemical wastes were accumulated in original product containers, the unit is located indoors within the Jones Laboratory Complex, no releases from the unit have been documented, and the fact that the unit is no longer used to manage chemical wastes, the potential for release from this unit to groundwater, surface water, air, and on-site soils is low.

Recommendations: PRC recommends no further action at this time.

SWMU 6 **Former Research Institute Dock Accumulation Area**

Conclusions: This unit is a small, enclosed, closet-like room at the north end of the Research Institute receiving area dock. The unit managed chemicals wastes (generally consisting of miscellaneous unused chemicals in their original containers) generated at the FMI. The facility stopped using this unit to manage chemical wastes in about May or June 1993. Because this unit is enclosed, the FMI receiving area is surfaced with asphalt, no releases from this unit have been documented, and the unit is no longer used to manage

chemical wastes, the potential for release from this unit to groundwater, surface water, air, and on-site soils is low.

Recommendations: PRC recommends no further action at this time.

SWMU 7 **Paint Shop Accumulation Area**

Conclusions: UC's Paint Shop generates waste paint and solvents from cleaning painting equipment and paint booth. The waste paint and solvents are accumulated in a 55-gallon drum. Although this unit has no specific release controls, it is located indoors, and no releases from it have been documented. As a result, the potential for release from this unit to groundwater, surface water, air, and on-site soils is low.

Recommendations: PRC recommends no further action at this time.

SWMU 8 **Printing Service Accumulation Area**

Conclusions: Until 1991, the facility's printing operations generated waste solvents and waste solvent-based inks. The facility no longer generates waste solvents and waste solvent-based inks from printing operations because the facility now uses water-based inks. Waste solvents and solvent-based inks were accumulated in a 5-gallon container. Also, according to a facility representative, waste solvents and waste solvent-based inks (and more recently, waste water-based inks) were absorbed in cleaning rags and accumulated in a 55-gallon drum. UC plans to immediately begin using a new 55-gallon drum to accumulate waste water-based inks. Although this unit has no specific release controls, it is located indoors, and no releases from it have been documented. As a result, the potential for release from this unit to groundwater, surface water, air, and on-site soils is low.

Recommendations: PRC recommends no further action at this time.

SWMU 9 **Laboratory Service Building**

Conclusions: Since it was constructed in 1986, this unit has been used to store chemical wastes and scintillation vials containing ^{3}H and ^{14}C with a radioactivity of less than 0.05 μCi/g, generated from laboratories throughout the facility. Wastes are stored in separate rooms by type. Toxic, reactive, and corrosive wastes are consolidated and shipped off site in lab packs. Flammable wastes are consolidated and shipped off site in 55-gallon drums. Scintillation vials are also consolidated and shipped off site in 55-gallon drums. Until 1991, the facility stored full 55-gallon drums of scintillation vials outside on a concrete pad.

The entrances to each of the storage rooms and to the unit itself have 3-inch door sills (in one case, a ramp is present instead of a sill), and all floor drains are sealed. No releases from this unit have been documented. Because this unit is enclosed and has secondary containment, and no releases from this unit have been documented, the potential for release from this unit to groundwater, surface water, air, and on-site soils is low.

Recommendations: PRC recommends no further action at this time.

SWMU 10 **Former Low-level Radioactive Waste Accumulation Area**

Conclusions: Before 1981, the facility stored low-level radioactive wastes in this unit (Room IB21 in the FMI). Wastes were brought to the unit in small containers, which were later consolidated into larger bins. Argonne personnel picked up low-level wastes directly from this unit. Because this unit is located indoors, no releases from this unit have been documented, and low-level radioactive wastes have not been stored in it for over 10 years, the potential for release from this unit to groundwater, surface water, air, and on-site soils is low.

Recommendations: PRC recommends no further action at this time.

SWMU 11 **Low-Level Radioactive Waste Accumulation Areas**

Conclusions: Low-level radioactive wastes, including scintillation vials containing radioisotopes other than ^{3}H and ^{14}C; lightly contaminated paper, plastic, and glass; aqueous waste; and animal carcasses are accumulated at the point of generation (primarily from clinical research laboratories) in a variety of containers. When these containers are full, they are transferred to SWMU 1. Because these containers are located indoors and only one instance of a container leak inside a building has been documented, the potential for release from this unit to groundwater, surface water, air, and on-site soils is low.

Recommendations: PRC recommends no further action at this time.

SWMU 12 **Carlson Building Incinerator Area**

Conclusions: The Goder 21-IN-SP incinerator is used to incinerate animal carcasses and animal bedding. It operates about 4 days per week, 8 hours per day under IEPA Incinerator Permit No. 031600DDP. Ash from the incinerator is accumulated in 50-gallon fiber drums. Because the incinerator is operating under an IEPA permit, the facility has not violated its permit (PRC 1993p), and the unit is located in the subbasement of the Carlson Building, the potential for release from this unit to groundwater, surface water, air, and on-site soils is low.

Recommendations: PRC recommends no further action at this time.

SWMU 13 **Anatomy Department Incinerator Area**

Conclusions: The Type 4, Goder 1520 incinerator is used to incinerate human anatomical wastes generated in the facility's gross anatomy laboratories. The unit operates about 2 hours per day, 1 day per week under IEPA Incinerator Permit No. 031600DDN. Ash from the incinerator is accumulated in 50-

gallon drums. Because the incinerator is operating under an IEPA permit, the facility has not violated its permit (PRC 1993p), and the unit is located in the basement of the Anatomy Building, the potential for release from this unit to groundwater, surface water, air, and on-site soils is low.

Recommendations: PRC recommends no further action at this time.

SWMU 14 **Former CLI Hospital Incinerator Area**

Conclusions: Until 1987, this unit was used to incinerate paper, rubber, plastic and floor sweepings, as well as human anatomical wastes and potentially infectious waste generated from the Wyler's Children's Hospital, Mitchell Hospital, and the Surgery Brain Research Pavilion. The unit operated under IEPA Incinerator Permit No. 031600EYY. In September 1987, the incinerator stack collapsed and the resulting fire burned much of the unit. The unit was rebuilt, but has remained inactive. In the fall of 1993, UC roofed over the opening where the unit's stack exited the CLI hospital. However, the unit has not been closed, as required, pursuant to IEPA requirements. Because the incinerator operated under an IEPA permit, the facility did not violate its permit (PRC 1993p), the unit is located in a subbasement, and is no longer in use, and the former stack opening has been roofed over, the potential for release from this unit to groundwater, surface water, air, and on-site soils is low.

Recommendations: According to an IEPA representative, the unit must be closed because it burned a special waste (potentially infectious waste). PRC recommends that the unit be closed pursuant to IEPA requirements.

SWMU 15 **Cottage Grove Dock Accumulation Area**

Conclusions: This unit consists of two rooms which are part of the Cottage Grove dock behind Mitchell Hospital. The smaller room is used to accumulate human

anatomical wastes, potentially infectious wastes, and chemotherapeutic wastes generated in various facility medical operations. The larger room contains two compactors used to compact miscellaneous nonhazardous wastes such as paper and cardboard. The anatomical, potentially infectious, and chemotherapeutic wastes are containerized and remain in these rooms for only about 2 days before being transferred to a semi-trailer. The doors to the rooms and the semi-trailer are not locked according to a facility representative. Because the wastes are accumulated in these rooms in packaged form, the wastes remain in these rooms for only a few days, and the rooms are enclosed, the potential for release from this unit to groundwater, surface water, air, and on-site soils is low.

Recommendations: PRC recommends no further action at this time.

SWMU 16 **Used Oil UST**

Conclusions: This 500-gallon steel tank is located at UC's Physical Plant Department Motor Pool facility and stores used oil generated from changing oil in facility vehicles. No releases from this unit have been documented; leak-testing of this UST in February 1993 showed no evidence of leaks.

Recommendations: PRC recommends no further action at this time.

SWMU 17 **Former Wyler Hospital Incinerator Area**

Conclusions: This unit was used to incinerate animal bedding. The unit operated under IEPA Incinerator Permit No. 031600DDO. Prior to September 1989, the unit was removed. Because the incinerator operated under an IEPA permit, the facility did not violate its permit (PRC 1993p), the unit was located in Wyler Hospital, and the unit is no longer present, the potential for release from this unit to groundwater, surface water, air, and on-site soils is low.

Recommendations: PRC recommends no further action at this time.

SWMU 18 **Former Accumulation Area No. 2**

Conclusions: This unit, located on the fourth floor of the Jones Laboratory Complex (Room No. 401), managed the same type of chemical wastes managed in SWMU 3. In fact, the cabinets used to manage chemical wastes in this unit were first used to manage chemical wastes in SWMU 3. This unit was used from January 1989 to October 1989. Based on the unit's location indoors within the Jones Laboratory Complex, its lack of documented releases, and the fact that the unit is no longer used to manage chemical wastes, the potential for release from this unit to groundwater, surface water, air, and on-site soils is low.

Recommendations: PRC recommends no further action at this time.

AOC 1 **LUST**

Conclusions: Based on visual and olfactory evidence, the facility identified a leak at an UST in October 1991. The Phase II Groundwater Investigation was completed at AOC 1 in February 1993. Soil and groundwater were found to be contaminated with BETX components and various PAHs. The need for and extent of any remedial efforts at this LUST will be based on results of the ongoing site characterization.

Recommendations: Continue with site characterization and implement appropriate remedial actions.

AOC 2 **Fuel Storage USTs**

Conclusions: Four USTs ranging in capacity from 2,000 gallons to 12,000 gallons are used by the facility to store diesel fuel and gasoline. All of the tanks are

constructed of fiberglass. The two USTs located at UC's Physical Plant Department Motor Pool facility are of double-walled construction and were leak-tested in fall 1991; the results showed no evidence of leaks. The USTs located at the Surgery Brain Research Pavilion and the University Medical Center Receiving Area were leak tested in August 1993 and showed no evidence of leaks.

Recommendations: PRC recommends no further action at this time.

TABLE 4

SWMU AND AOC SUMMARY

	SWMU	Dates of Operation	Evidence of Release	Recommended Further Action
1.	FMI Blockhouse	About 1981 to present	None	None
2.	Former Medical Center Accumulation Area	From late 1990 to early 1991	None	None
3.	Former Accumulation Area No. 1	About 1980 to 1988; closure was approved in 1989	None	None
4.	Former Accumulation Area No. 3	Late 1989 to mid-1990	None	None
5.	Former Accumulation Area No. 4	Mid-1990 to May or June 1993	None	None
6.	Former FMI Dock Accumulation Area	Prior to 1981 to May or June 1993	None	None
7.	Paint Shop Accumulation Area	Unknown to present	None	None
8.	Printing Service Accumulation Area	Unknown to present	None	None
9.	Laboratory Service Building	1986 to present	None	None

TABLE 4 (Continued)

SWMU AND AOC SUMMARY

SWMU	Dates of Operation	Evidence of Release	Recommended Further Action
10. Former Low-Level Radioactive Waste Accumulation Area	Unknown to 1992	None	None
11. Low-Level Radioactive Waste Accumulation Areas	1981 to present	Single documented incidence of leak inside a building that was immediately cleaned up	None
12. Carlson Building Incinerator Area	About 1967 to present	None	None
13. Anatomy Department Incinerator Area	Unknown to present	None	None
14. Former CLI Hospital Incinerator Area	Unknown to about 1987	None	The unit should be closed pursuant to IEPA requirements
15. Cottage Grove Dock Accumulation Area	Unknown to present	None	None
16. Used Oil UST	Unknown to present	None	None
17. Former Wyler Hospital Incinerator Area	Unknown to prior to September 1989	None	None
18. Former Accumulation Area No. 2	Late 1988 or early 1989 to October 1989	None	None

TABLE 4 (Continued)

SWMU AND AOC SUMMARY

AOC	Dates of Operation	Evidence of Release	Recommended Further Action
1. Leaking UST	Unknown to 1991	Visual and olfactory evidence of soil contamination after tank was removed; groundwater and soil found to be contaminated with BETX components and various PAHs	Continue site characterization and implement necessary remedial actions
2. Fuel Storage USTs	Unknown to present	None	None

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PRC. 1993b. Record of Telephone Conversation Regarding Recreational Use of Jackson Park West and East Lagoons. Between Eric Morton, Environmental Scientist, and Thomas (last name unknown), Park Attendant. September 29.

PRC. 1993c. Record of Telephone Conversation Regarding the Location of the Nearest Lake Michigan Water Intake to UC. Between Eric Morton, Environmental Scientist, and Staff Engineer, Chicago Water Department. September 29.

PRC. 1993d. Record of Telephone Conversation Regarding the Discharge of Combined Sewers in the UC Area. Between Eric Morton, Environmental Scientist, and Mr. Knowles, Metropolitan Water Reclamation District of Greater Chicago. September 29.

PRC. 1993e. Record of Telephone Conversation Regarding Generation and Management of Pathological, Potentially Infectious, and Chemotherapeutic Wastes. Between Eric Morton, Environmental Scientist, and John Klare, Director, UC Medical Center Safety and Regulatory Compliance. October 13.

PRC. 1993f. Record of Telephone Conversation Regarding Generation and Management of Low-Level Radioactive Wastes. Between Eric Morton, Environmental Scientist, and Dale Boyce, Director, UC Radiation Safety Office (RSO). October 15.

PRC. 1993g. Record of Telephone Conversation Regarding Follow-up Questions to the VSI Conducted on September 30, 1993. Between Eric Morton, Environmental Scientist, and Steve Beaudoin, Director, UC Safety and Environmental Affairs. October 15.

PRC. 1993h. Record of Telephone Conversation Regarding Generation and Disposal of Chemotherapeutic Wastes. Between Eric Morton, Environmental Scientist, and Donna Nelson, UC, Medical Center Safety and Regulatory Compliance. October 15.

PRC. 1993i. Record of Telephone Conversation Regarding Answers to Follow-up Questions. Between Eric Morton, Environmental Scientist, and Steve Beaudoin, Director, UC Safety and Environmental Affairs. October 18.

PRC. 1993j. Record of Telephone Conversation Regarding Follow-up Questions About Low-Level Radioactive Wastes. Between Eric Morton, Environmental Scientist, and Dale Boyce, Director, UC RSO. October 20.

PRC. 1993k. Record of Telephone Conversation Regarding Generation and Management of Miscellaneous Hazardous Wastes. Between Eric Morton, Environmental Scientist, and Steve Beaudoin, Director, UC Safety and Environmental Affairs. October 20.

PRC. 1993l. Record of Telephone Conversation Regarding Generation and Management of Pathological, Potentially Infectious, and Chemotherapeutic Wastes. Between Eric Morton, Environmental Scientist, and Donna Nelson, UC Medical Center Safety and Regulatory Compliance. October 20.

PRC. 1993m. Record of Telephone Conversation Regarding Cottage Grove Dock Accumulation Area. Between Eric Morton, Environmental Scientist, and Donna Nelson, UC Medical Center Safety and Regulatory Compliance. October 22.

PRC. 1993n. Record of Telephone Conversation Regarding IEPA's Most Recent Inspection of the UC Facility. Between Eric Morton, Environmental Scientist, and Anna VanOrden, RCRA Inspector, IEPA. October 25.

PRC. 1993o. Record of Telephone Conversation Regarding UC's USTs and Printing Service. Between Eric Morton, Environmental Scientist, and Steve Beaudoin, Director, Safety and Environmental Affairs. October 26.

PRC. 1993p. Record of Telephone Conversation Regarding UC's Air Permits. Between Eric Morton, Environmental Scientist, and Joe Kotas, IEPA, Field Operations Section (Maywood). October 27.

PRC. 1993q. Record of Telephone Conversation Regarding Additional Follow-up Questions. Between Eric Morton, Environmental Scientist, and Steve Beaudoin, Director, Safety and Environmental Affairs. November 19.

PRC. 1993r. Record of Telephone Conversation Regarding Cottage Grove Dock Accumulation Area. Between Eric Morton, Environmental Scientist, and Donna Nelson, UC Medical Center Safety and Regulatory Compliance. November 19.

PRC. 1993s. Record of Telephone Conversation Regarding UC's Notification of Hazardous Waste Activity. Between Eric Morton, Environmental Scientist, and File Clerk, U.S. Environmental Protection Agency. November 22.

PRC. 1993t. Record of Telephone Conversation Regarding the Former CLI Incinerator. Between Eric Morton, Environmental Scientist, and Donna Nelson, UC Medical Center Safety and Regulatory Compliance. January 5.

PRC. 1993u. Record of Telephone Conversation Regarding Closure Requirements for the Former CLI Incinerator. Between Eric Morton, Environmental Scientist and Ron Harmon, IEPA, Division of Land Pollution Control, Permitting Section. January 7.

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UC. 1986. Letter Regarding Underground Hazardous Waste Storage Tank Registration. Notification for Underground Hazardous Waste Storage Tanks Forms for Nine Tanks are Enclosed. From Norman H. Nachtrieb, UC Laboratory Safety Officer. To William C. Child, Acting Manager, IEPA, Division of Land Pollution Control. June 30.

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UC. 1990a. Revision No. 2 to the RCRA Part B Permit Application for the UC. EPA Identification No. ILD005421136. January 22.

UC. 1990b. Revision No. 3 to the RCRA Part B Permit Application for the UC. EPA Identification No. ILD005421136. May 14.

UC. 1990c. Revision No. 4 to the RCRA Part B Permit Application for the UC. EPA Identification No. ILD005421136. September 14.

UC. 1990d. Amended RCRA Part A Permit Application. EPA Forms 3510-1 and 3510-3. December 3.

UC. 1991. Letter Regarding Class 1 Modification to the RCRA Part B Permit Application for the UC. EPA Identification No. ILD005421136. From David O'Leary, Assistant Vice President. To Lawrence Eastep, IEPA, Manager, Permit Section, Division of Land Pollution Control. September 5.

UC. 1992a. Internal Correspondence Regarding Underground Storage Tanks. From Glenn Klinksiek, Risk Management Department. To David O'Leary, Ray Busch, and John Klare. April 19.

UC. 1992b. Letter Regarding a Correction to the Facility's RCRA Part B Permit. From David L. O'Leary, Assistant Vice President, Operations and Risk Management. To EPA Region 5, Waste Management Division. June 19.

UC. 1993a. 1992 Hazardous Waste Report. February 25.

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APPENDIX A

EPA PRELIMINARY ASSESSMENT FORM 2070-12

(1 Page)

EPA

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 1 - SITE INFORMATION AND ASSESSMENT

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
IL	IL D 005 421 136

II. SITE NAME AND LOCATION

01 SITE NAME *(Legal, common, or descriptive name of site)*	02 STREET, ROUTE NO. OR SPECIFIC LOCATION IDENTIFIER				
University of Chicago	5801 South Ellis Avenue				
03 CITY	**04 STATE**	**05 ZIP CODE**	**06 COUNTY**	**07 COUNTY CODE**	**08 CONG DIST**
Chicago	IL	60637	Cook		
09 COORDINATES: LATITUDE 41° 47' 24" N	**LONGITUDE** 87° 35' 54" W				

10 DIRECTIONS TO SITE *(Starting from nearest public road)*

Lake Shore Drive to 59th Street exit; west on 59th Street to South Ellis Avenue; North on South Ellis Avenue to 5801 South Ellis Avenue

III. RESPONSIBLE PARTIES

01 OWNER *(if known)*	02 STREET *(Business, mailing residential)*		
University of Chicago	5801 South Ellis Avenue		
03 CITY	**04 STATE**	**05 ZIP CODE**	**06 TELEPHONE NUMBER**
Chicago	IL	60637	(312) 702-1234
07 OPERATOR *(If known and different from owner)*	**08 STREET** *(Business, mailing, residential)*		
09 CITY	**10 STATE**	**11 ZIP CODE**	**12 TELEPHONE NUMBER**

13 TYPE OF OWNERSHIP *(Check one)*

☒ A. PRIVATE ☐ B. FEDERAL: _____ (Agency Name) ☐ C. STATE ☐ D. COUNTY ☐ E. MUNICIPAL

☐ F. OTHER _____ (Specify) ☐ G. UNKNOWN

14. OWNER/OPERATOR NOTIFICATION ON FILE *(Check all that apply)*

☒ A. RCRA 3010 DATE RECEIVED: 08 / 18 / 80 (MONTH DAY YEAR) ☐ B. UNCONTROLLED WASTE SITE *(CERCLA 103 c)* DATE RECEIVED: / / (MONTH DAY YEAR) ☐ C. NONE

IV. CHARACTERIZATION OF POTENTIAL HAZARD

01 ON SITE INSPECTION

☒ YES DATE 09/ 30 / 93 ☐ NO

BY *(Check all that apply)*

☐ A. EPA ☒ B. EPA CONTRACTOR ☐ C. STATE ☐ D. OTHER CONTRACTOR

☐ E. LOCAL HEALTH OFFICIAL ☐ F. OTHER: _____ *(Specify)*

CONTRACTOR NAME(S): PRC Environmental Management, Inc. (PRC)

02 SITE STATUS *(Check one)*

☒ A. ACTIVE ☐ B. INACTIVE ☐ C.UNKNOWN

03 YEARS OF OPERATION

1890 (BEGINNING YEAR) | present (ENDING YEAR) ☐ UNKNOWN

04 DESCRIPTION OF SUBSTANCES POSSIBLY PRESENT, KNOWN, OR ALLEGED

Primarily miscellaneous chemical wastes including flammable, toxic, reactive, and corrosive chemicals, generated from research and teaching laboratories; also, low-level radioactive, pathological, potentially infectious, and chemotherapeutic wastes, nonhazardous used oil,

05 DESCRIPTION OF POTENTIAL HAZARD TO ENVIRONMENT AND/OR POPULATION

Several underground storage tanks (UST) were removed in 1991 and evidence of release noted. The leaking underground storage tank (LUST) site is being characterized, including monitoring by 11 monitoring wells (two additional monitoring wells were installed prior to December 7, these wells have not been sampled). Groundwater is not used as a drinking water source within 3 miles of the site.

V. PRIORITY ASSESSMENT

01 PRIORITY FOR INSPECTION *(Check one. If high or medium is checked, complete Part 2 - Waste Information and Part 3 - Description of Hazardous Conditions and Incidents.)*

☐ A. HIGH *(Inspection required promptly)* ☐ B. MEDIUM *(Inspection required)* ☒ C. LOW *(Inspect on time-available basis)* ☐ D. NONE *(No further action needed; complete current disposition form)*

VI. INFORMATION AVAILABLE FROM

01 CONTACT	02 OF *(Agency/Organization)*			03 TELEPHONE NUMBER
Kevin Pierard	U.S. EPA			(312) 886-4448
04 PERSON RESPONSIBLE FOR ASSESSMENT	**05 AGENCY**	**06 ORGANIZATION**	**07 TELEPHONE NUMBER**	**08 DATE**
Eric S. Morton		PRC	(312) 856-8700	09 / 29 / 93 (MONTH DAY YEAR)

APPENDIX B

VISUAL SITE INSPECTIONS SUMMARY AND PHOTOGRAPHS

VISUAL SITE INSPECTIONS SUMMARY

(29 Pages)

University of Chicago
5801 South Ellis Avenue
Chicago, Illinois
ILD005421136

INITIAL VISUAL SITE INSPECTION

Date:	September 30, 1993
Primary Facility Representative:	Steve Beaudoin, Director, Safety and Environmental Affairs
Representative Telephone No.:	(312) 702-9999
Additional Facility Representatives:	Dr. Sam Wang, Former Lab Safety Officer Bruce Shubert, Senior Industrial Hygenist
Inspection Team:	Eric Morton, PRC Environmental Management, Inc. (PRC) Terry Quirk, PRC
Photographer:	Terry Quirk, PRC
Weather Conditions:	Sunny, light wind, about 60 °F
Summary of Activities:	The visual site inspection (VSI) began at about 10:20 a.m. with an introductory meeting. The inspection team explained the purpose of the VSI and the agenda for the visit. Facility representatives then discussed the facility's past and current operations, solid wastes generated, and release history. Facility representatives provided the inspection team with copies of requested documents. The VSI tour began at about 1:00 p.m. The tour began at the A. J. Carlson (Carlson) Building Incinerator (SWMU 12) located in the subbasement of the Carlson Building. The tour proceeded to the Former Medical Center Accumulation Area (SWMU 2), located in Room No. JO-83 of the Carlson Building. The tour proceeded to the Franklin McLean Research Institute (FMI) Blockhouse (SWMU 1), located in the courtyard behind Billings Hospital. The inspection team observed the chemical waste storage section of this unit, but did not observe the low-level radioactive waste storage section because of the required medical monitoring to enter this unit. The tour continued at the Former Accumulation Area No. 1 (SWMU 3) located in the Jones Laboratory Complex. The

tour continued at the Former Accumulation Areas No. 4 (SWMU 5) and No. 3 (SWMU 4). These units are located in the basement (Room No. 016), first floor (Room No. 104), and fourth floor (Room No. 409) of the Jones Laboratory Complex, respectively.

The tour proceeded to the Former FMI Dock Accumulation Area (SWMU 6) and the Anatomy Department Incinerator Area (SWMU 13).

The tour continued to the Laboratory Service Building (SWMU 9), where the inspection team observed (1) the laboratory; (2) the flammable, toxic, reactive, corrosives, and flammable drum storage rooms; and (3) a concrete pad outside, adjacent to the south side of the unit.

The Paint Shop Accumulation Area (SWMU 7), Printing Service Accumulation Area (SWMU 8), Former Low-Level Radioactive Waste Accumulation Area (SWMU 10), Low-level Radioactive Waste Accumulation Areas (SWMU 11), Cottage Grove Dock Accumulation Area (SWMU 15), the Used Oil UST (SWMU 16), Former CLI Hospital Incinerator Area (SWMU 14), Former Accumulation Area No. 2 (SWMU 18), Fuel Storage USTs (AOC 1) and the LUST (AOC 2) were not observed because these units were not confirmed as SWMUs and AOCs until after completion of the VSI. SWMU 16 and AOCs 1 and 2 are located underground and could not have been observed even at the time of the VSI.

The Former Wyler Hospital Incinerator Area (SWMU 17) was not observed because this unit has been removed.

The tour concluded at about 3:30 p.m., after which the inspection team held an exit meeting with facility representatives. The VSI was completed and the inspection team left the facility at about 3:45 p.m.

FOLLOW-UP VSI

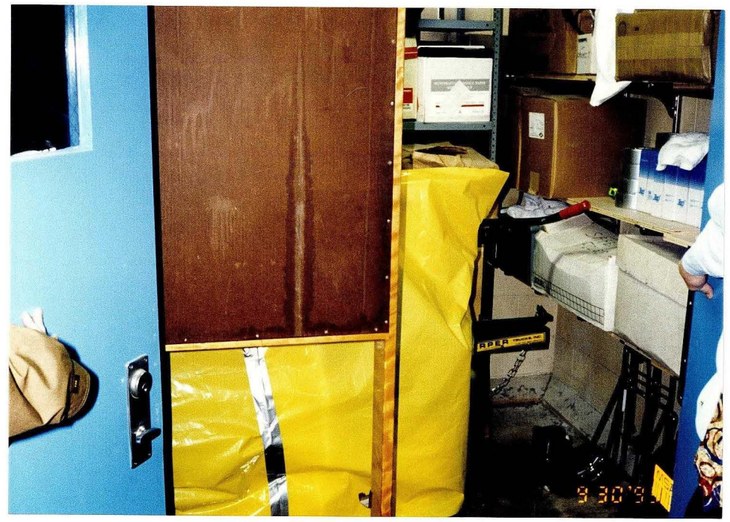
Date:	December 7, 1993
Primary Facility Representative:	Steve Beaudoin, Director, Safety and Environmental Affairs
Representative Telephone No.:	(312) 702-9999
Additional Facility Representatives:	Donna Nelson, Dale Boyce,

Inspection Team:	Eric Morton, PRC Environmental Management, Inc. (PRC)
Photographer:	Eric Morton, PRC
Weather Conditions:	Cloudy, light wind, about 45 °F
Summary of Activities:	The follow-up VSI began at about 09:00 a.m. with an introductory meeting with Ms. Nelson. The inspection team explained the purpose of the VSI and the agenda for the visit. The VSI tour began at about 09:30 a.m. The tour began at the Cottage Grove Accumulation Area (SWMU 15) located in the basement of the Cottage Grove Parking Structure. The tour proceeded to the Former CLI Hospital Incinerator Area (SWMU 14), located in Room No. L-048 of the CLI Hospital Building. The tour proceeded to the Former Wyler Hospital Incinerator Area (SWMU 17), located in Rooms No. C-663 and C-671 on the sixth floor of the Wyler Hospital in the Animal Resources Center. The tour continued at the Former Low-Level Radioactive Accumulation Area (SWMU 10) located in Room No. IB-21 in the FMI. The inspection team then observed Low-Level Radioactive Accumulation Areas (SWMU 11) in Rooms No. N-220 and N-350 in the Hughes Institute. The tour proceeded to the fourth floor of the building located at 5720 S. Ellis where historically, a lead smelter was located. The tour proceeded to UC's Printing Service located at 5020 S. Cornell, where PRC observed the Printing Service Accumulation Area (SWMU 8) and UC's typewriter repair operations. The tour proceeded to UC's Paint Shop located at 5620 S. Stony Island, where PRC observed UC's Paint Shop Accumulation Area (SWMU 7). The tour proceeded to UC's Physical Plant Department Motor Pool Facility located at 5601 S. Cottage Grove, where PRC observed the LUST (AOC 1). The tour proceeded to Former Accumulation Area No. 2 (Room No. 401 of the Jones Laboratory Complex). The tour concluded at about 3:00 p.m.

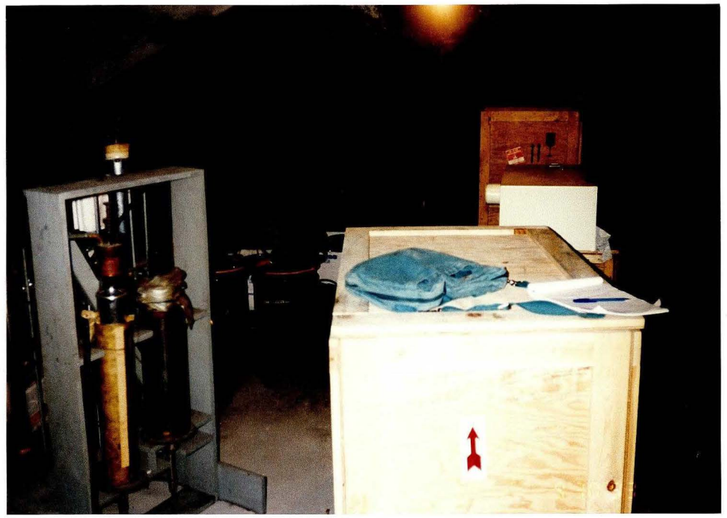
Photograph No. 1 Location: SWMU 1
Orientation: North Date: September 30, 1993
Description: Shelving units, overpack drums, and scintillation vials in waste chemical storage section of the FMI Blockhouse.

Photograph No. 2 Location: SWMU 1
Orientation: North Date: September 30, 1993
Description: Metal cabinets used to accumulate and store chemical hazardous wastes; note bags of vermiculite in foreground.

Photograph No. 3 Location: SWMU 1
Orientation: West Date: September 30, 1993
Description: Entrance to the low-level radioactive waste storage section of the FMI Blockhouse.



Photograph No. 4 Location: SWMU 2
Orientation: East Date: September 30, 1993
Description: Room JO-83 in the subbasement of the Carlson Building; chemical wastes are no longer managed in this unit. Cracks in the floor have been repaired.

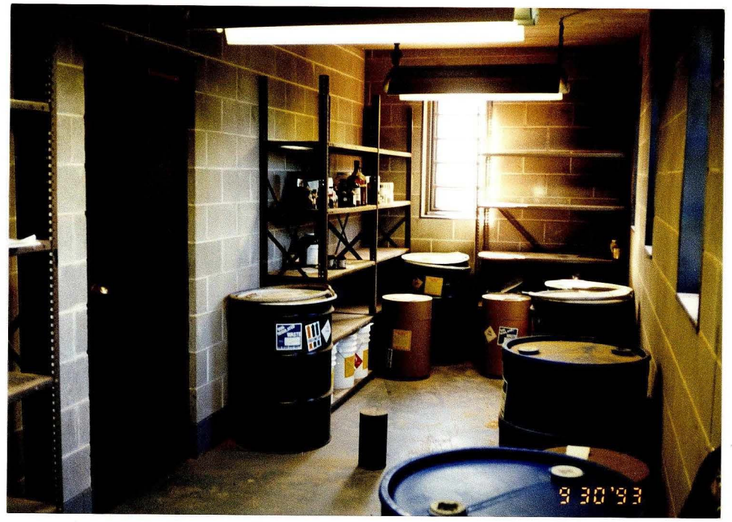


Photograph No. 5 Location: SWMU 3
Orientation: East Date: September 30, 1993
Description: Former Accumulation Area No. 1 is currently used to store laboratory equipment and empty containers. PRC noted water was leaking from the ceiling, and the floor was chipped and worn.

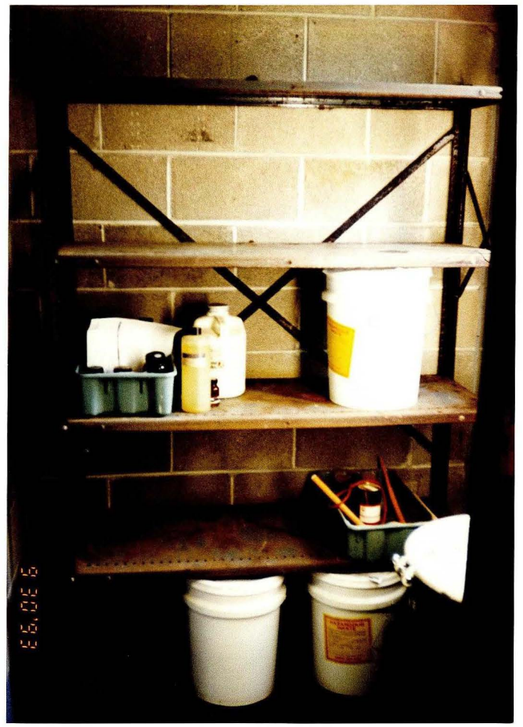
Photograph No. 6 Location: SWMU 4
Orientation: West Date: September 30, 1993
Description: Storage cabinets for flammable chemicals were used to accumulate hazardous wastes at the Former Accumulation Area No. 2. Vermiculite seen on bottom shelf and in container on bottom shelf was used to absorb any spills.

Photograph No. 7 Location: SWMU 5
Orientation: Northeast Date: September 30, 1993
Description: Storage cabinets shown in Photograph No. 6 were previously located in the area shown in this photograph. Former Accumulation Area No. 3 is currently used to store furniture and laboratory equipment.

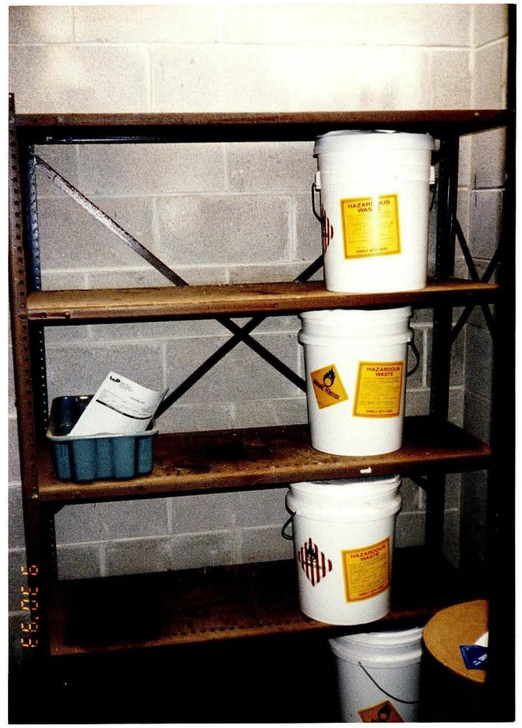
Photograph No. 8 Location: SWMU 6
Orientation: North Date: September 30, 1993
Description: Hazardous wastes are no longer accumulated at the Former Research Institute Dock Accumulation Area. This unit is currently used to store various supplies. PRC noted no evidence of releases.



Photograph No. 9 Location: SWMU 9
Orientation: West Date: September 30, 1993
Description: The flammable storage room in the Laboratory Service Building stores (for greater than 90 days) hazardous and nonhazardous wastes in lab packs, 55-gallon drums, and on shelves (in original containers). PRC noted no evidence of release observed.



Photograph No. 10 Location: SWMU 9
Orientation: South Date: September 30, 1993
Description: During the VSI, small containers of sodium arsenate and three 10-gallon pails of PCB wastes were stored in the Laboratory Service Building toxic storage room. PRC noted no evidence of release.

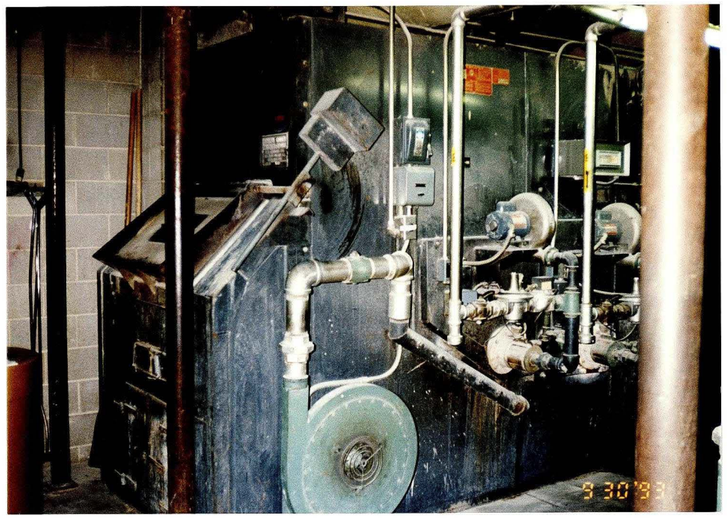


Photograph No. 11 Location: SWMU 9
Orientation: South Date: September 30, 1993
Description: The following 20-gallon pails of hazardous waste were stored in the Laboratory Service Building reactive storage room: 20 gallons mixed waste (D001, D002, D003), 15 gallons of diuric acid (D001), and 15 gallons of flammable solids (D001). Additional miscellaneous waste chemicals were stored in their original containers. PRC noted no evidence of releases.

Photograph No. 12 Location: SWMU 9
Orientation: South Date: September 30, 1993
Description: The following hazardous wastes were stored in the Laboratory Service Building corrosives storage room during the VSI: a 20-gallon container of acetic acid (D001, D002, D003), one 55-gallon drum of corrosive liquid (D001 and D002), one 55-gallon drum of waste corrosive liquid (D002), and one 55-gallon drum of sodium hydroxide (D001, D002, D0003, D004, and D005). PRC noted no evidence of releases.

Photograph No. 13 Location: SWMU 9
Orientation: North Date: September 30, 1993
Description: The following items were stored in the Laboratory Service Building flammable drum storage room during the VSI: gas canisters, empty pails, drum dollies, and an overpack drum. A plugged floor drain is visible in the center foreground. PRC noted no evidence of releases.

Photograph No. 14 Location: SWMU 9
Orientation: North Date: September 30, 1993
Description: Empty concrete pad (part of SWMU 9) located at east end of the Laboratory Service Building; PRC noted no cracks or staining.

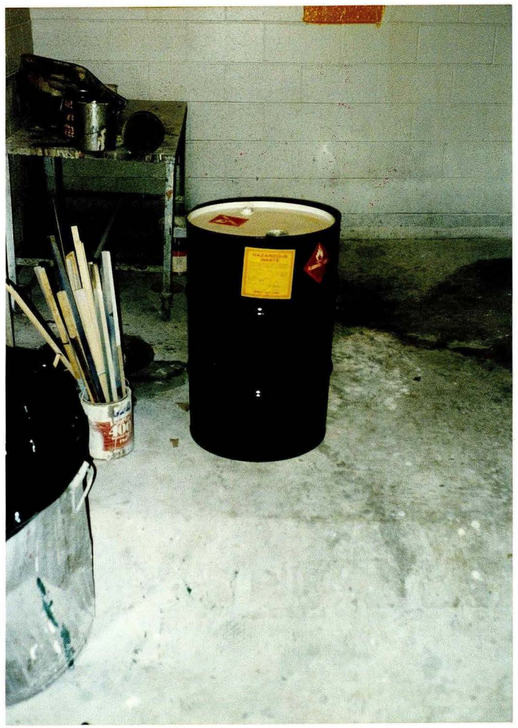


Photograph No. 15 Location: SWMU 12
Orientation: Southwest Date: September 30, 1993
Description: Southern burn unit of the Carlson Building Incinerator Area. Note the 50-gallon fiber drum at the far left edge of the picture. Ash from the incinerator is accumulated in this drum.

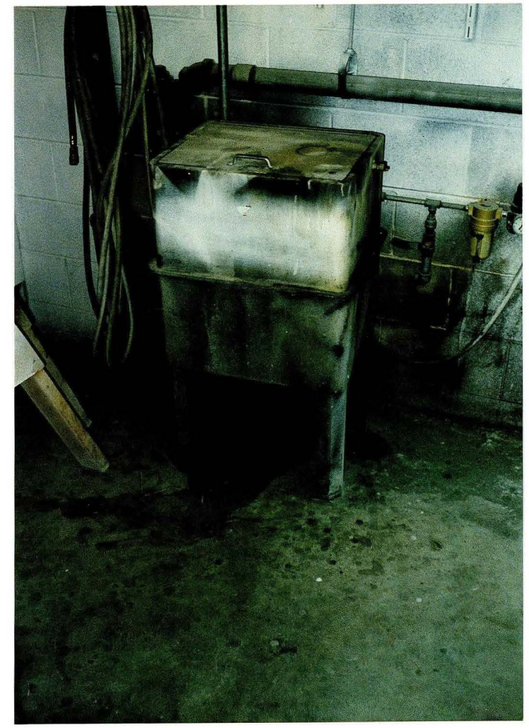
Photograph No. 16 Location: SWMU 12
Orientation: Northwest Date: September 30, 1993
Description: Northern burn unit of the Carlson Building Incinerator Area.

Photograph No. 17 Location: SWMU 13
Orientation: Northwest Date: September 30, 1993
Description: Twin burn units of the Anatomy Department Incinerator Area. Unit in background was not operational during the VSI.

Photograph No. 18 Location: SWMU 8
Orientation: Southeast Date: December 7, 1993
Description: Covered tanks used to degrease typewriter parts.



Photograph No. 19
Orientation: South
Location: SWMU 7
Date: December 7, 1993
Description: The 55-gallon drum used to accumulate waste paint and solvents. The drum was labeled as containing D001 waste.

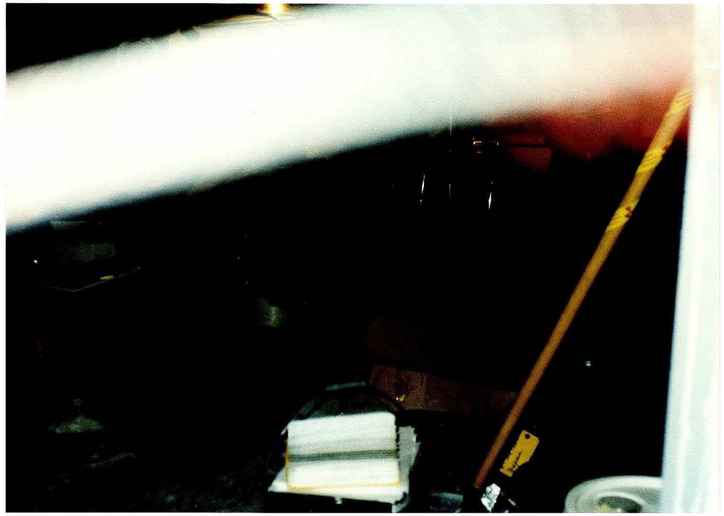


Photograph No. 20
Orientation: South
Location: SWMU 7
Date: December 7, 1993
Description: The recirculating system used to clean paint guns.

Photograph No. 21 Location: SWMU 7
Orientation: West Date: December 7, 1993
Description: The Paint Shop paint booth.

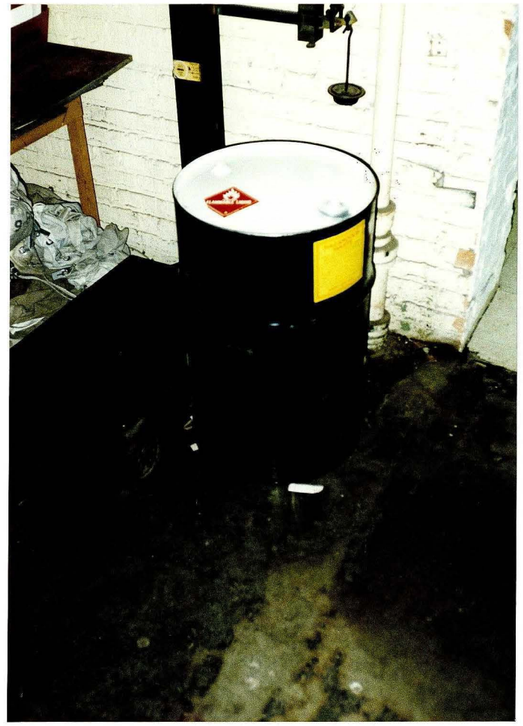
Photograph No. 22 Location: SWMU 7
Orientation: West Date: December 7, 1993
Description: The sump associated with the Paint Shop paint booth. A water curtain captures overspray into the sump. The paint sinks to the bottom of the sump and is periodically cleaned out.

Photograph No. 23 Location: SWMU 8
Orientation: North Date: December 7, 1993
Description: The 55-gallon drum used to accumulate dirty cleaning rags. Some of the rags have absorbed waste solvents, waste solvent-based inks, and waste water-based inks. The 5-gallon bucked next to the drum may be used during cleaning of the printing equipment.

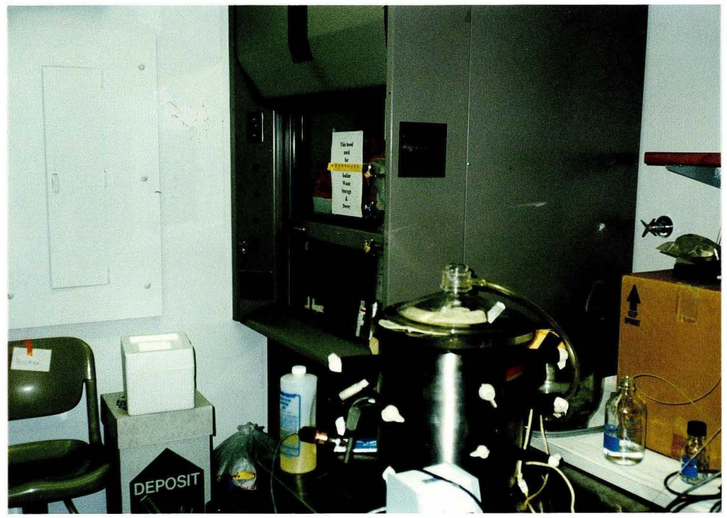


Photograph No. 25 Location: SWMU 10
Orientation: Southeast Date: December 7, 1993
Description: Room No. IB-21 in the FMI. This room is currently used to store miscellaneous supplies and infrequently to store radioactive sources that UC hopes to find additional uses for.

Photograph No. 26 Location: SWMU 11
Orientation: South-Southwest Date: December 7, 1993
Description: The 55-gallon drums used to accumulate low-level radioactive wastes. These particular containers are located in Room No. N-220 in the Hughes Institute.

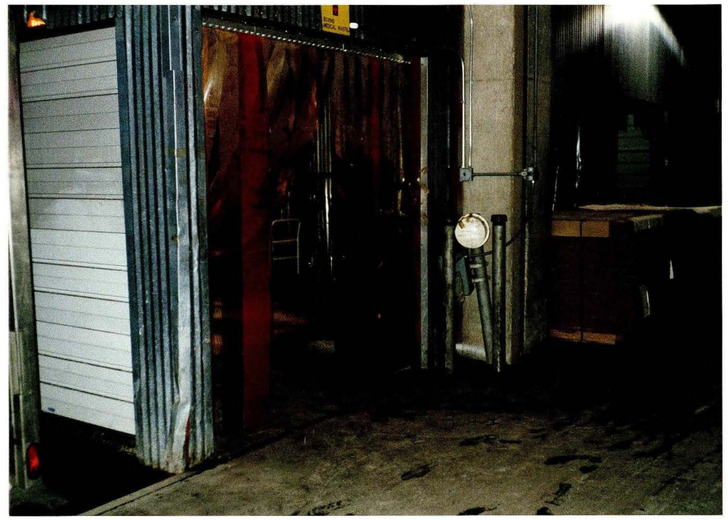


Photograph No. 24 Location: SWMU 8
Orientation: West Date: December 7, 1993
Description: The 55-gallon drum that UC intends to begin using to accumulate waste water-based inks. The drum is labeled as containing D001 wastes.



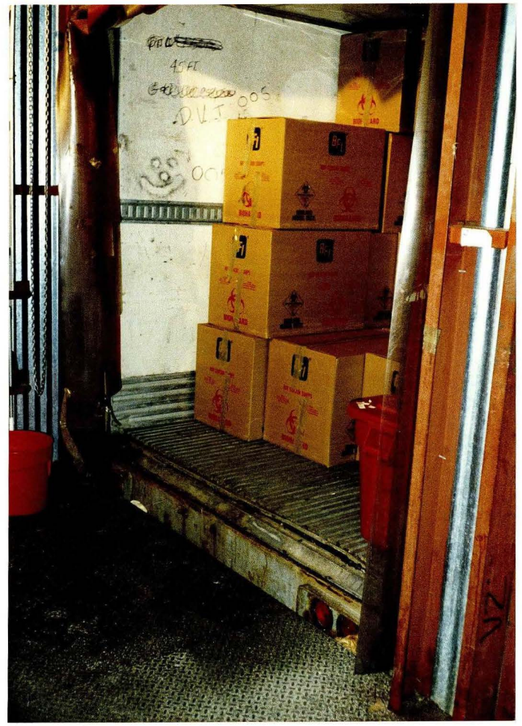
Photograph No. 27 Location: SWMU 11
Orientation: West-Northwest Date: December 7, 1993
Description: A laboratory hood (located in Room No. N-350 in the Hughes Institute) used to accumulate low-level radioactive waste behind shielding.

Photograph No. 28 Location: SWMU 14
Orientation: North-northeast Date: December 7, 1993
Description: The inactive CLI Hospital Incinerator Area located in Room No. L-048 in the CLI Hospital Building. The room is now being used to store miscellaneous supplies.



Photograph No. 29 Location: SWMU 15
Orientation: North-northwest Date: December 7, 1993
Description: The two rooms on the Cottage Grove Dock used to accumulate wastes. The room on the left (the smaller room) is used to accumulate pathological, potentially infectious, and chemotherapeautic wastes. The room on the right contains two compactors used to compact nonhazardous wastes such as paper and cardboard.

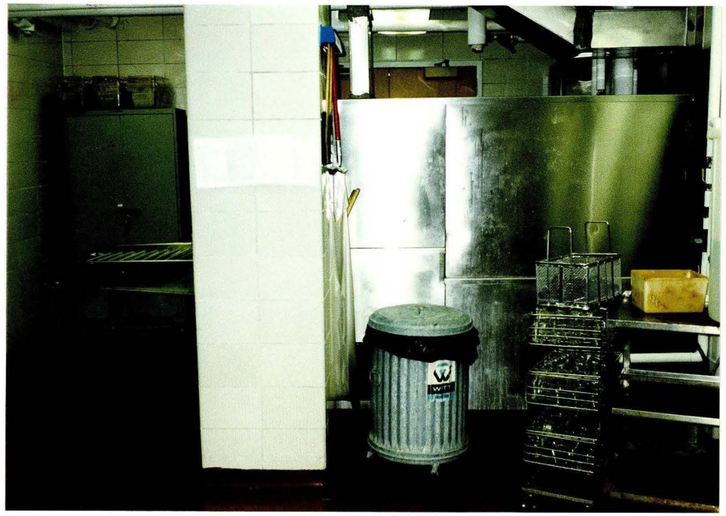
Photograph No. 30 Location: SWMU 15
Orientation: North Date: December 7, 1993
Description: Closeup of the 8-gallon plastic containers used to containerize anatomical and chemotherapeautic wastes.



Photograph No. 31 Location: SWMU 15
Orientation: South-southwest Date: December 7, 1993
Description: Closeup of the cardboard boxes used to containerize potentially infectious wastes. These wastes are loaded into a semi-trailer backed up to the dock.

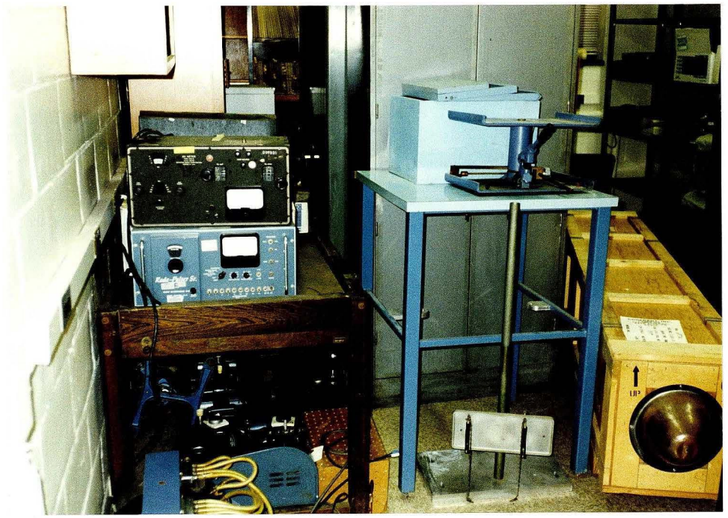
Photograph No. 32 Location: SWMU 15
Orientation: West Date: December 7, 1993
Description: The two compactors used to compact nonhazardous wastes such as paper and cardboard.

Photograph No. 33 Location: SWMU 16
Orientation: Southeast Date: December 7, 1993
Description: In the left rear of the photograph is visible the covered opening to the 500-gallon UST used to store waste oil generated from vehicle maintenance activities. In the foreground are visible covered openings to two of UCs USTs used to store diesel and gasoline, respectively (AOC 2).



Photograph No. 34 Location: SWMU 17
Orientation: South Date: December 7, 1993
Description: The location of the Former Wyler Hospital Incinerator Area. Room No. C-663 in the Wyler Hospital is now occupied by an animal cage washer.

Photograph No. 35 Location: SWMU 17
Orientation: South Date: December 7, 1993
Description: Location of the Former Wyler Hospital Incinerator Area. Room No. C-671 of the Wyler Hospital is now used to store an animal cage washer and other animal supplies. Trash can used to accumulate spent animal bedding is visible on the right side.



Photograph No. 36 Location: SWMU 18
Orientation: East Date: December 7, 1993
Description: Location of the Former Accumulation Area No. 2. Room No. 401 of the Jones Laboratory Complex is now used to store miscellaneous electrical equipment and supplies.

Photograph No. 37 Location: AOC 1
Orientation: East-southeast Date: December 7, 1993
Description: The LUST site located at UC's Physical Plant Department Motor Pool Facility at 5601 S. Cottage Grove.

APPENDIX C

VISUAL SITE INSPECTION FIELD NOTES

(11 Pages)

(125)

University of Chicago
ILD 005 421 136
Sept. 30, 1993

PRC Team: Eric Morton
Terry Quirk

U of C: 1) Steve Beaudoin, Dir.
Safety & Env Affairs.
1) Dr. Knucktree - Dir
2) Sam Wang, Former Dir.

Wastes generated throughout campus, mostly solvents from chemistry exp. also, from medical center
SET in wheeling handled wastes, before 1986 to accumulate, lab pack (accumulation pt charges) & transportation off-site
* ultimate disposition. In past Safety Office personnel would pickup waste @ point of generation to Rm 16 of Jones Lab.
From 1986 - 1990/1991 Precision

SSH 9/30/93

(126)

~~Environmental~~ Energy Sys Systems (Loveland, IL)
no longer in business (broker)
Willpen Environmental, Chicago, IL
Since 1991 Willpen will pickup wastes once per week and bring to accumulation points. Since May or June 1993 began taking directly to Lab Services

Blockhouse - split building 1/2 chem 1/2 rad
0.5 mCi or less goes to Lab Services

Hospital, Med Center & Remainder all one ~~type of~~ 2nd ID #
Chemical
Routine Trash
Pathological Waste ⇒ Culver Bldg (crematory) building
Chemotherapeutics
Potential Infectious
Rad

SSH 9/30/93

(127)

ATS Building main Physical Plant Bldg
- paint thinner 50 gal/year when using Carbitol.

Dormitories - occasionally call for
Labs - cooling towers waste streams.

~ 1890

Dr. Norman [redacted] teaching since 1981. No idea on how things were handled prior to this.

Waste Streams

1) Chemical Waste
- small bottles of chemicals no longer useful to labs. Try to find another on Campus user or if/she user, then Lab Serv disposes

EJM 9/30/53

(128)

Flammable, TOXIC, Reactive, and corrosive
mostly unused portions of chemicals from labs.

1) Lab Packs - 55-gal metal drum/ fiberglass drums

2) Flammable waste - 55-gal fiberdrums

3) Rad Waste
Currently Adco Env handles
* radioactive (since when 1981) prior to that rad waste to Argonne Natl Lab.

Dr. Wang - Rad ~ 80 drums scintillation per year - 55 gal drum

Flammable Liq - ~80 drums/year

Lab Pack - 7 or 8 tons/year

Scintillation Vials 2cc - small
EJM 9/30/53 5cc - big

129

Number vials/ drum 3,500 - 4,000
written certification from lab that all
vials < 0.05 μCi.
Tritium (³H) and Carbon-14
primary types.
Non-disposable mat waste -
accumulates in lab & cargo
to Blockhouse
Prefer that accumulates in lab
then when builds up - each lab
* may have individual contract w/
Adco + pick up directly
If dec lab or insufficient room
to store in labs then transported
to blockhouse (by Adco) -
in blockhouse scintillation vials
stored in drums.
Accumulated in labs in
702E drums - provided by
EJM 7/30/93

130

Adco for lab vials
~ 30 gal bright yellow / sticker

398 on-Campus Clients - majority
in Biological Sciences Div.

← Clinical Research
Biological Sciences Division - also
includes Cummings. →

Clinical Wastes
~ 1,000 labs throughout Campus
ATS Building
Paint Shop - drum increments (30 gal)
Cooling Tower Chemicals
Old batteries
Dorms
Oils - vacuum pump from vacuum lines in
labs, vehicles

Pathological Wastes
Anatomical → Incinerator in Anatomy Dept.
Animal Carcasses → Incinerator in Carlson
Building

EJM 9/30/93

(131)

Each incinerator has separate SCC #

Different permits

2hr/day 1day/week - contract

Type 4 Incinerator

Appl No. 7301033?2

ID: 0316000N

Operating Permit 12/20/91

Potentially Infectious

Browning-Ferris Inc.

1 box/month 24x27x14"

Woodlawn Health Clinic } on campus

Athletic Trainers }

have individual contracts w/ BFI.

Chemotherapeutics

John Klare 702-1733

BFI - white tubs

ESM 9/30/93

(132)

USTs

Printing Dept - 5020 S. Cornell

1 tank out of serv

unknown construction

Contents unknown

estimated last use 1974

Underground Fuel tank

~ 2,000 - 3,000 gal 500 gal

just pumped out.

Will provide copies info for each former + current tank →

Hydrolysis + Neutralization in Lab Stor

stopped about 1991

acids + bases from labs (usually 2-5L bottles) mix together → pH of 7.

1) Dilute acid + bases 2) mix together in 3 gal jar - few

ESM 9/31/93

(133)

years ago only did 20 gal/year
reaches pH 7.0 ⇒ sewer system.
(✗) check log books for quantity dates
~1997-1991
Combined Sewer - will
check if permit
PRC off site for lunch 12:10
PRC return from lunch and beg'n
USI - 1300

Carlson Sub Basement
2 incinerator units (2 photos)
P1 + P2 each incinerator
Ash goes to BPI ⇒
18 50-gal fiber/2 mo
both units active 4d/week
1967 installed 8hr/day
one floor drain; no staining

5 of 7 9/30/93

RMJO-83 (134)

Only used for 1 winter. Dr.
Wang thinks 1991.
Bottles stored on shelving. Used
for only 1 winter because outside
was too cold. P3 - South
Concrete floor basement of Carlson
no floor drain
No formal closure

Blockhouse

Door has 6" sill across.
Cardboard trays of scintillation vials
Yellow overpack drums
Shelving units (metal) empty
uranyl acetate (very small bottle)
no cracking on floors, one
small stain; wall joints
sealed.

12 of 7 9/30/93

(135)

Two metal cabinets
for flammable and unknown
compounds.
1 drum 55-gal
waste flammable liquid
xylene methanol
D001, F002, D018, D036, F003,
F005, D038
8/19/93 accumulation start
1 drum 7/20/93 a
xylene/toluene mix
F003, F005, F004
30 gal formaldehyde solution labeled
non-regulated
Fire blanket, Fire extinguisher,
vermiculite (5-7 bags)

George Herbert Jones
Rm 401 not used area to
store chemicals | Dr. Wang
ESM 9/30/93

(136)

thinks meant to write Rm 104
which is currently used.
Wang did say that Rm 409 used
temporarily to accumulate chemical
wastes
RM 016
Chemicals stored in cabinets with
door. About 5+ cabinets. Floor
shows some staining, and chipped
up in place. Floor drain
appears open and Dr. Wang thinks
plugged up.
Dr. Wang thinks stopped using in
1988. Use began probably before
* Check closure 1981
6" concrete sill across
doorway.
ESM 9/30/93

137

Rm 104 chemicals began in 1988 accumulated in 2 large cabinets

3 shelves vermiculite at bottom to catch spills;

Open drain next to cabinet

Just inside Safety Storage ~~Cabinets~~ ESM

Cabinets for Flammable chemicals

NFPA Code 3

60 gal cap. each

Nachtrie (sp) of Name

Minimal floor staining - may very well be water.

Same cabinets as in RM 104 were formerly in RM 409 stopped using in 1988

~~posts~~ ESM No floor drain seen however, many old pieces of eqpt + furniture

ESM 9/30/93

Research Institute Receiving Area 138

Chemical stored on pallets; no floor drain, Smallest accumulation point

Largest FMI blockhouse, then chem dept. No floor sill, no spills evident. 5/6/93 stopped using

Anatomy Incinerator

used to incinerate body parts from gross anatomy labs

Labs Services

4" sill @ outside door

Front lab area where hydrolysis/ neutralization done in sink in front area then the pH = 7 down drain

Receiving area door has ramp to prevent leakage

ESM 9/30/93

(139)

CCS system

Canadian ws HA

all Floordrains filled and capped

MSD - annual inspection

Contractor does biennial insp & gives certification to U of C

No permit for sewer U of C exempt.

Pad outside used to store drums of scintillation vials from 1988 to 1991; now stored in Flammable Room

5 drums 7 /al vials cardboard

12/7/93

Met Donna Nelson & listed sites to see - Ms Nelson said she would like to get each dept. person involved with each site.

EWT 12/7/93

Cottage Grove Accumulation Area (140)

All materials in staging area

Red tubs @ point of gen.

left side Lab hazard

R side trash - two compactors

RM

CLI incinerator L-Ø48

inactive - contacts do not know when last active or what burned

Greg Van Scoder, Env Services

Wyler Incinerator

C-663/C-671

bedding to garbage can to dumpster → Carlson Bldg dumpster or incinerator

freezer for carcasses taken to morgue in Carlson Bldg.

3 bags (40# each) / week

2 to 3 # / 1 to 2 X each month

EWT 12/7/93

(141)

James Linsley
Animal Resource Ctr

IB21 appears to be a room with a service elevator and a refrigerated storage area marked w/ radioactive tape. The area is empty (light does not turn on) and there is no storage of radioactive material at the time of the USI.

Room is not marked, but it is last one in corridor and its position next to IB19 and access from IB20 suggests strongly that this is IB21.

ESW 12/7/93

(142)

Up to 2 years ago - fiber drums were accumulated w/ 1 cb rad waste - compacted in next room and brought to blockhouse. Some sources in cans behind shielding - may still have some use. About 2 yrs ago compactor brought to blockhouse and storage stopped.

Hughes Institute
N220 Room
hood used to store
N350 55-gall drums
wet/dry kept separate

Bookstore 5750 S. Ellis
4th Floor NW Corner
was former smelting operation up until about 15 yrs ago
Other floors had printing presses.

ESW 12/7/93

(143)

No one available @ site
that knows operations.

Print Shop 5020 S. Cornell
Solvents/Inks placed into rags
and placed in drum.
Every Thursday rags picked up
VOC content in ink now
< 1%

Roscoe
Now one to put waste inks
are placed into a 55-gal drum
RQ waste, Flammable Liquids, NOS
UN 1993 PkII D001

3 tanks for degreasing (#3
not used now). ~ currently
about 37 gal solvent

ESM 12/7/93

(144)

drained once in 5 to 6 years.
Repair about 1 to 2 typewriters / month.

Vents removed and cleaned out last
year. Concrete flooring
down overall and pulled stuff
after doing any degreasing. No floor
drains.

Paint booth - water curtain
oil-based/latex paint cullets
in tubs - w.l - per pick up

tub for paint gun cleaner -
recirculates w/ thinner - emptied
into drum. Along w/
paint thinner from cleaning of
brushes.

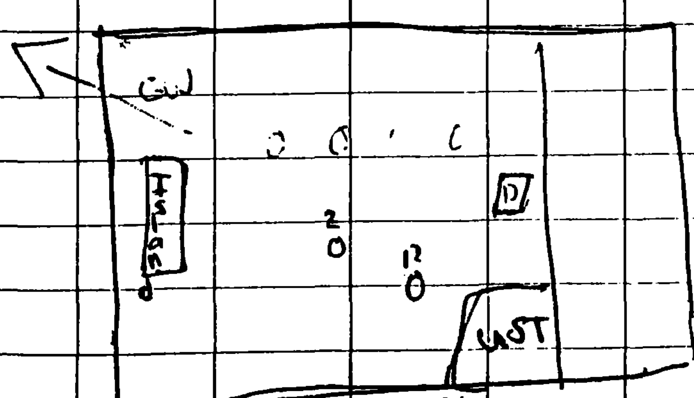
ESM 12/7/93

(145)

55-gallon drum
RQ, waste Flammable Liq NOS
3, UN1993, PG II D001
1 55 gal drum/month
Arrived @ Physical Plant - this is where the LUST site is located.
Confirmed locations of the monitoring wells.

12,000 + 2,000 gall.
unleaded diesel

2 X 3000
2 X 1000
X 500 diesel



ESM 12/7/93

(146)

Just received air permit for SVE system -

Jones 401
Now filled w/ empty cabinets + bookshelves. Formerly (according to IEPA report) stored chemicals in cabinets
cinderblock walls, tile floors

ESM 12/7/93

ATTACHMENT A

HAZARDOUS WASTES POTENTIALLY MANAGED IN UC SWMUS

(4 pages)

EPA Hazardous Waste No.	Description of Hazardous Waste
D001	Ignitable (flash point less than 140°F)
D002	Corrosive (pH ≤2.0 or ≥ 12.5)
D003	Characteristic of Reactivity

EPA Hazardous Waste No.	Hazardous Waste Based on Toxicity Characterstics
D004	Arsenic
D005	Barium
D018	Benzene
D006	Cadmium
D019	Carbon tetrachloride
D020	Chlordane
D021	Chlorobenzene
D022	Chloroform
D007	Chromium
D023	o-Cresol
D024	m-Cresol
D025	p-Cresol
D026	Cresol
D016	2,4-D
D027	1,4-Dichlorobenzene
D028	1,2-Dichloroethane
D029	1,1-Dichloroethlyene
D030	2,4-Dinitrotoluene
D012	Endrin
D031	Heptachlor (and its hydroxide)
D032	Hexachlorobenzene
D033	Hexachlor-1,3-butadiene
D034	Hexachloroethane
D008	Lead
D013	Lindane
D009	Mercury
D014	Methoxychlor
D035	Methyl ethyl ketone
D036	Nitrobenzene
D037	Pentachlorophenol
D038	Pyridine
D010	Selenium
D011	Silver
D039	Tetrachloroethylene
D015	Toxaphene
D040	Trichloroethylene
D041	2,4,5-Trichlorophenol
D042	2,4,6-Trichlorophenol
D017	2,4,5-TP (Silvex)
D043	Vinyl chloride

EPA Hazardous Waste No.	Hazardous Waste
Generic:	
F001	The following spent halogenated solvents used in degreasing tetrachloroethylene, trichloroethylene, methylene chloride, 1,1,1-trichloroethane, carbon tetrachloride, and chlorinated fluorocarbons; all spent solvent mixtures and blends used in degreasing containing, before use, a total of ten percent or more (by volume) of one or more of the above halogenated solvents or those solvents listed in F002, F004 or F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.
K001	Bottom sediment sludge from the treatment of wastewaters from wood preserving processes that use creosote and/or pentachlorophenol.
K006	Wastewater treatment sludge from the production of chrome oxide green pigments (anhydrous and hydrated).
K009	Distillation bottoms from the production of acetaldehyde from ethylene.
K021	Aqueous spent antimony catalyst waste from fluoromethanes production.

Hazardous Waste No.	Substance
P077	Benzenamine, 4-nitro-
P030	Cyanides (soluble cyanide salts), not otherwise specified
P034	2-Cyclohexyl-4, 6-dinitrophenol
P050	Endosulfan
P050	6,9-Methano-2,4,3-benzo dioxathiepen, 6,7,8,9, 10,10-hexachloro-1,5,5a, 6,9,9a-hexahydro-, 3-oxide
P072	alpha-Naphthylthiourea
P077	p-Nitroaniline
P087	Osmium oxide OsO_4, (T-4)-
P087	Osmium tetroxide

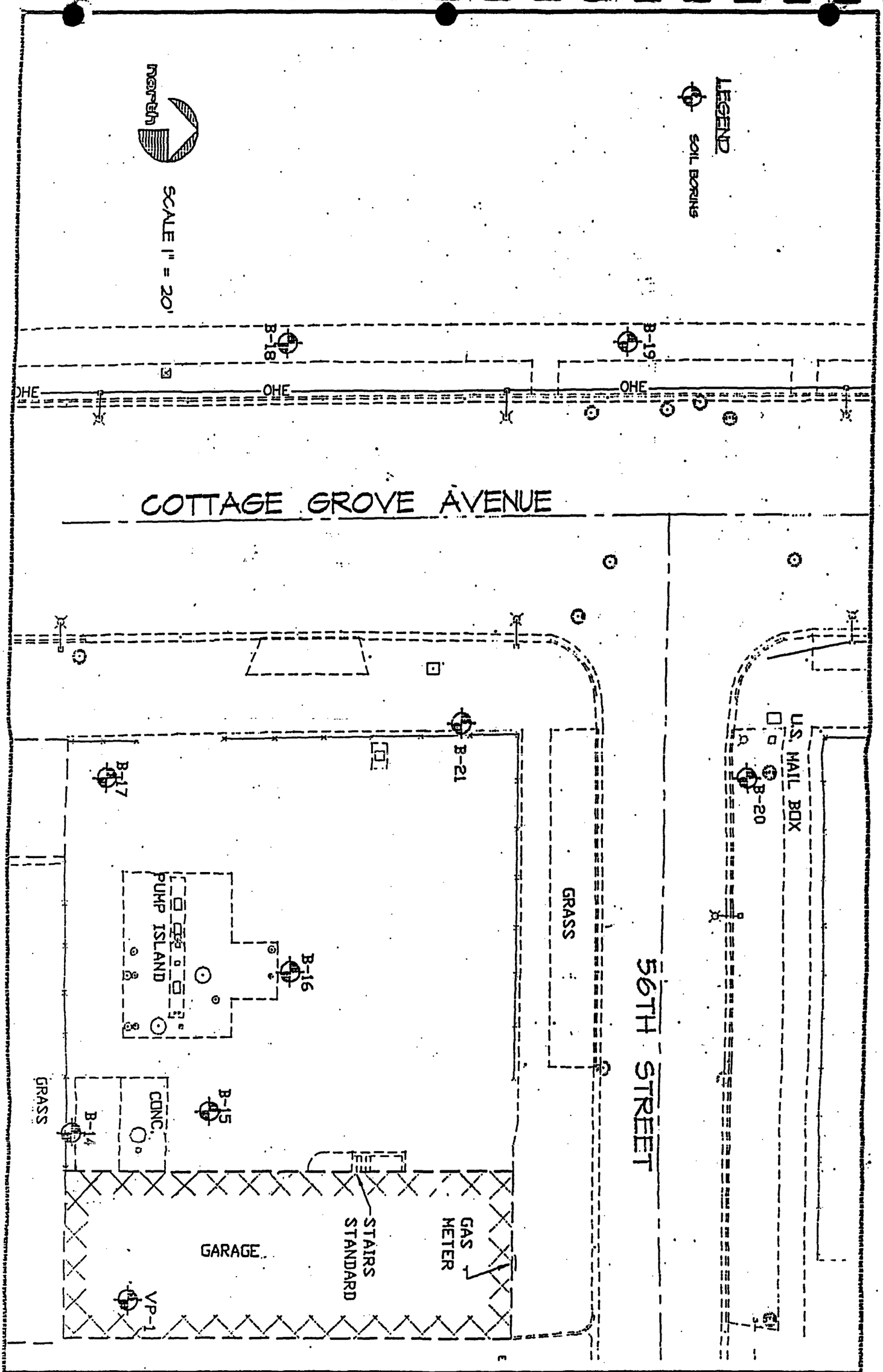
Hazardous Waste No.	Substance
P089	Parathion
P034	Phenol, 2-cyclohexyl-4, 6-dinitro-
P089	Phosphorothioic acid, O,O-diethyl O-(4-nitrophenyl) ester
P072	Thiourea, 1-naphthalenyl-
U034	Acetaldehyde, trichloro-
U112	Acetic acid, ethyl ester (I)
U144	Acetic acid, lead (2+) salt
U002	Acetone (I)
U006	Acetyl chloride (C,R,T)
U009	Acrylonitrile
U012	Aniline (I,T)
U014	Auramine
U012	Benzenamine (I,T)
U014	Benzenamine, 4,4'-carbonimidoylbis [N,N-dimethyl-
U019	Benzene (I,T)
U069	1,2-Benzenedicarboxylic acid, dibutyl ester
U239	Benzene, dimethyl-(I,T)
U056	Benzene, hexahydro-(I)
U220	Benzene, methyl-
U169	Benzene, nitro-
U021	Benzidene
U197	p-Benzoquinone
U021	[1,1'-Biphenyl]-4, 4'-diamine
U031	1-Butanol (I)
U159	2-Butanone (I,T)
U031	n-Butyl alcohol (I)
U211	Carbon tetrachloride
U034	Chloral
U044	Chloroform
U197	2,5-Cyclohexadienediene-1, 4-dione
U056	Cyclohexane (I)
U057	Cyclohexanone (I)
U069	Dibutyl phthalate
U108	1,4-Diethyleneoxide
U108	1,4-Dioxane
U077	Ethane, 1,2-dichloro-
U117	Ethane, 1,1'-oxybis- (I)

Hazardous Waste No.	Substance
U228	Ethene, trichloro-
U112	Ethyl acetate (I)
U117	Ethyl ether
U077	Ethylene dichloride
U122	Formaldehyde
U213	Furan, tetrahydro- (I)
U144	Lead acetate
U080	Methane, dichloro-
U211	Methane, tetrachloro-
U044	Methane, trichloro-
U154	Methanol (I)
U154	Methyl alcohol (I)
U080	Methylene chloride
U159	Methyl ethyl ketone (MEK) (I,T)
U168	2-Naphthalenamine
U165	Naphthalene
U168	beta-Naphthylamine
U169	Nitrobenzene (I,T)
U188	Phenol
U002	2-Propanone (I)
U009	2-Propenenitrile
U196	Pyridine
U213	Tetrahydrofuran (I)
U219	Thiourea
U220	Toluene
U228	Trichloroethylene
U239	Xylene (I)

ATTACHMENT B

SOIL BORING AND MONITORING WELL LOCATION PLANS

(2 pages)



DATE: APRIL 1,1993 DRAWN: A.S CHECKED: JTO PROJECT NO: 913119	*UNIVERSITY OF CHICAGO* *MOTOR POOL FACILITY*	SOIL BORING LOCATION PLAN	UNITED ANALYTICAL SERVICES, INC. environmentalists HILLSIDE, IL (708) 449-2021 MATTOON, IL (217) 235-3177

LEGEND

- MONITORING WELL
- PROPOSED MONITORING WELL
- FENCE
- BENCH MARK B.M.

MONITORING WELLS	
DESIG.	GROUND ELEVATION
MW-1	14.01
MW-2	14.22
MW-3	15.76
MW-4	14.18
MW-5	14.46
MW-6	14.18
MW-7	14.12
MW-8	14.79
MW-9	14.07
MW-10	13.93
MW-11	13.92

B.M. - TOP OF NORTH-NORTHWEST CAP BOLT OF FIRE HYDRANT. ELEVATION = 15.96

north

SCALE 1" = 20'

PMW-2

MW-10

OHE

PMW-1

U.S. MAIL BOX

B.M.

56TH STREET

COTTAGE GROVE AVENUE

MW-4

GRASS

MW-3

MW-9

MW-1

MW-2

MW-6

MW-5

MW-7

MW-8

PUMP ISLAND

CONC.

GAS METER

STAIRS STANDARD

GARAGE

GRASS

MW-11

OHE

OHE

UNITED ANALYTICAL SERVICES, INC.
environmentalists
HILLSIDE, IL (708) 449-2525
MATTOON, IL (217) 235-3177

MONITORING WELL LOCATION PLAN

UNIVERSITY OF CHICAGO
MOTOR POOL FACILITY

DATE: APRIL 11993
DRAWN: A.S
CHECKED: JTD
PROJECT NO: 913119

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

REPLY TO THE ATTENTION OF:

HRE-8J

September 28, 1993

Mr. Steve Beaudoin
Director, Safety and Environmental Affairs
University of Chicago
970 East 58th Street, 4th Floor
Chicago, Illinois 60637

Re: Visual Site Inspection
University of Chicago
Chicago, Illinois
ID No. ILD 005 421 136

Dear Mr. Beaudoin:

The United States Environmental Protection Agency (U.S. EPA) Region V will conduct a Preliminary Assessment and a Visual Site Inspection (PA/VSI) at the referenced facility. This inspection is conducted pursuant to the Resource Conservation and Recovery Act, as amended (RCRA) Section 3007 and the Comprehensive Environmental Response, Compensation, and Liability Act, as amended (CERCLA) Section 104(e). The referenced facility has generated, treated, stored, or disposed of hazardous waste subject to RCRA. The PA/VSI requires identification and systematic review of all solid waste streams at the facility. The objective of the PA/VSI is to determine whether or not releases of hazardous wastes or hazardous constituents have occurred or are occurring at the facility which may require further investigation. This analysis will also provide information to establish priorities for addressing any confirmed releases.

The visual site inspection of your facility is to verify the location of all solid waste management units (SWMUs) and areas of concern (AOCs) and to make a cursory determination of their condition by visual observation. The definitions of SWMUs and AOCs are included in Attachment I. The VSI supplements and updates data gathered during a preliminary file review. During this site inspection, no samples will be taken. A sampling visit to ascertain if releases of hazardous waste or constituents have occurred may be required at a later date.

Assistance of some of your personnel may be required in reviewing solid waste flow(s) or previous disposal practices. The site inspection is to provide a technical understanding of the present and past waste flows and handling, treatment, storage, and disposal practices. Photographs of the facility are

necessary to document the condition of the units at the facility and the waste management practices used.

The VSI has been scheduled for September 30, 1993 at 10:30 a.m. The inspection team will consist of Eric Morton and Terry Quirk of PRC Environmental Management, Inc., a contractor for the U.S. EPA. Representatives of the Illinois Environmental Protection Agency (IEPA) may also be present. Your cooperation in admitting and assisting them while on site is appreciated.

The U.S. EPA recommends that personnel who are familiar with present and past manufacturing and waste management activities be available during the VSI. Access to any relevant maps, diagrams, hydrogeologic reports, environmental assessment reports, sampling data sheets, environmental permits (air, NPDES), manifests and/or correspondence is also necessary, as such information is needed to complete the PA/VSI.

If you have any questions, please contact me at (312) 886-4448 or Francene Harris at (312) 886-2884. A copy of the Preliminary Assessment/Visual Site Inspection Report, excluding the conclusions and Executive Summary portion will be sent when the report is available.

Sincerely yours,

Francene D. Harris for

Kevin M. Pierard, Chief
OH/MN Technical Enforcement Section

Enclosure

cc: Anna Van Orden, EPA
Larry Eastep, IEPA

ATTACHMENT I

The definitions of solid waste management unit (SWMU) and area of concern (AOC) are as follows.

A SWMU is defined as any discernable unit where solid wastes have been placed at any time from which hazardous constituents might migrate, regardless of whether the unit was intended for the management of a solid or hazardous waste.

The SWMU definition includes the following:

- RCRA regulated units, such as container storage areas, tanks, surface impoundments, waste piles, land treatment units, landfills, incinerators, and underground injection wells
- Closed and abandoned units
- Recycling units, wastewater treatment units, and other units that U.S. Environmental Protection Agency has generally exempted from standards applicable to hazardous waste management units
- Areas contaminated by routine and systematic releases of wastes or hazardous constituents, such as wood preservative treatment dripping areas, loading or unloading areas, or solvent washing areas

An AOC is defined as any area where a release to the environment of hazardous wastes or constituents has occurred or is suspected to have occurred on a nonroutine or nonsystematic basis. This includes any area where such a release in the future is judged to be a strong possibility.

PRC requests that, if available, the following facility information be provided during the VSI:

1. Two copies of a detailed map of the facility
2. Facility history, including dates of operation, ownership changes, and production processes
3. Current facility operations
4. Processes that generate waste that is treated, stored, or disposed of at the facility
5. Records of disposal of wastes generated at the facility (manifests, annual reports, etc...)
6. Security at the facility
7. Information regarding geology and the uses of ground water and surface water in the area
8. Permits (air, NPDES, etc...) the facility currently holds or has held in the past and documentation of any permit violations that may have occurred
9. Records of any spills that may have occurred at the facility
10. Descriptive operational information (location, dimensions, capacity, materials of construction, etc...), dates of start-up and closure, wastes managed, release controls, and release history for each SWMU

Illinois Environmental Protection Agency · 2200 Churchill Road, Springfield, IL 62706

217/782-6762

Refer to: 0316410001 -- Cook County
University of Chicago
ILD005421136
RCRA General

May 19, 1988

Karl E. Bremer, Chief
Technical Program Section
U.S. Environmental Protection Agency
Region V
230 South Dearborn
Chicago, Illinois 60604

Dear Mr. Bremer:

Enclosed you will find the following:

1. The Initial Screening for Environmental Significance form for the above referenced facility.

2. A copy of the Certification Regarding Potential Releases from Solid Waste Management Units for the above referenced facility and/or the reply the Agency received in response to our request for information regarding the above.

The following form(s) were not on file at the IEPA for this facility:

1. Notification of Hazardous Waste Site (EPA Form 8900-1).

2. Preliminary Assessment (EPA Form 2070-12).

Based upon a review of the information available on the above referenced facility, the Agency has determined that this facility is not environmentally significant and that a Facility Management Plan should not be prepared. Please let us know if you do not agree with this determination.

If you have any questions regarding this initial screening, please contact Jim Moore of my staff at 217/782-9875.

Very truly yours,

Lawrence W Eastep by AZ

Lawrence W. Eastep, P.E., Manager
Permit Section
Division of Land Pollution Control

LWE:JKM:bjh/1458j/88

Enclosure

cc: Division File
USEPA Region V -- Mary Murphy
FOS Maywood Region

553-4

Closure 391 Attachment 3 JKM

CERTIFICATION REGARDING POTENTIAL RELEASES FROM SOLID WASTE MANAGEMENT UNITS (CLOSURE PLAN REVIEW)

FACILITY NAME: University of Chicago

EPA I.D. NUMBER: ILD 005421136 0316410001

LOCATION CITY: Chicago

STATE: Illinois

1. Are there any of the following solid waste management units (existing or closed) at your facility? NOTE - DO NOT INCLUDE HAZARDOUS WASTES UNITS CURRENTLY SHOWN IN YOUR PART A APPLICATION and in your closure plan.

	YES	NO
• Landfill		X
• Surface Impoundment		X
• Land Farm		X
• Waste Pile		X
• Incinerator		X
• Storage Tank (Above Ground)		X
• Storage Tank (Underground)		X
• Container Storage Area		X
• Injection Wells		X
• Wastewater Treatment Units		X
• Transfer Stations		X
• Waste Recycling Operations		X
• Waste Treatment, Detoxification		X
• Other _____		

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2. If there are "Yes" answers to any of the items in Number 1 above, please provide a description of the wastes that were stored, treated or disposed of in each unit. In particular, please focus on whether or not the wastes would be considered as hazardous wastes or hazardous constituents under RCRA. Also include any available data on quantities or volume of wastes disposed on and the dates of disposal. Please also provide a description of each unit and include capacity, dimensions, location at facility, provide a site plan if avaliable.

Not applicable.

NOTE: Hazardous waste are those identified in 40 CFR 261. Hazardous constituents are those listed in Appendix VIII Of 40 CFR Part 261.

3. For the units noted in Number 1 above and also those hazardous waste units in your Part A application and in your closure plan. please describe for each unit any data available on any prior or current releases of hazardous wastes or constituents to the environment that may have occurred in the part or still be occurring.

Please provide the following information

a. Date of release
b. Type of waste released .
c. Quantity or volume of waste released
d. Describe nature of release (i.e., spill, overflow, ruptured pipe or tank, etc.)

No release of hazardous wastes or constituents has occurred.

4. In regard to the prior releases described in Number 3 above, please provide (for each unit) any analytical data that may be available which would describe the nature and extent of environmental contamination that exists as a result of such releases, Please focus on concentrations of hazardous wastes or constituents present in contaminated soil or groundwater.

Not applicable.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the submittal is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. (42 U.S.C. 6902 et seq. and 40 CFR 270.11(d))

Sam Wang, Lab. Safety Officer
Typed Name and Title

Wei-yu Wang
Signature

April 6, 1988
Date

CERTIFICATION REGARDING POTENTIAL RELEASES FROM
SOLID WASTE MANAGEMENT UNITS

FACILITY NAME: THE UNIVERSITY OF CHICAGO

EPA I.D. NUMBER: ILD005421136

LOCATION CITY: CHICAGO

STATE: ILLINOIS

1. Are there any of the following solid waste management units (existing or closed) at your facility? NOTE - DO NOT INCLUDE HAZARDOUS WASTE UNITS CURRENTLY SHOWN IN YOUR PART A APPLICATION

	YES	NO
° Landfill		X
° Surface Impoundment		X
° Land Farm		X
° Waste Pile		X
° Incinerator		X
° Storage Tank (Above Ground)		X
° Storage Tank (Underground)		X
° Container Storage Area		X
° Injection Wells		X
° Wastewater Treatment Units		X
° Transfer Stations		X
° Waste Recycling Operations		X
° Waste Treatment, Detoxification		X
° Other _____		

2. If there are "Yes" answers to any of the items in Number 1 above, please provide a description of the wastes that were stored, treated or disposed of in each unit. In particular, please focus on whether or not the wastes would be considered as hazardous wastes or hazardous constituents under RCRA. Also include any available data on quantities or volume of wastes disposed of and the dates of disposal. Please also provide a description of each unit and include capacity, dimensions and location at facility. Provide a site plan if available.

NOTE: Hazardous wastes are those identified in 40 CFR 261. Hazardous constituents are those listed in Appendix VIII of 40 CFR Part 261.

Make

3. For the units noted in Number 1 above and also those hazardous waste units in your Part A application, please describe for each unit any data available on any prior or current releases of hazardous wastes or constituents to the environment that may have occurred in the past or may still be occurring.

   Please provide the following information

   a. Date of release
   b. Type of waste released
   c. Quantity or volume of waste released
   d. Describe nature of release (i.e., spill, overflow, ruptured pipe or tank, etc.)

   There are currently no hazardous waste releases, nor have there been any hazardous waste releases to the environment from any of the hazardous waste units described in our Part A application and its revision, approved October 24, 1984 by Mr. B.G. Constantelos, Director Waste Management Division, Region V.

4. In regard to the prior or continuing releases described in Number 3 above, please provide (for each unit) any analytical data that may be available which would describe the nature and extent of environmental contamination that exists as a result of such releases. Please focus on concentrations of hazardous wastes or constituents present in contaminated soil or groundwater.

   As noted in Number 3 above, there have been no releases of hazardous waste or constituents to the environment.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the submittal is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. (42 U.S.C. 6902 et seq. and 40 CFR 270.11(d))

Norman H. Nachtrieb, University Laboratory Safety Officer
Typed Name and Title

Norman H. Nachtrieb
Signature

Februrary 24, 1986
Date